The IRON AGE

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ENOUGH STEEL?

The Time to Watch Inventories May Be Now

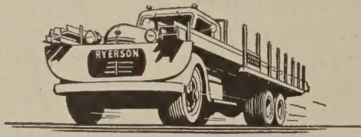
Informed opinion holds that the time may be near when industry must again show caution in the control of steel inventories. In fact, for some types of steel that time has already arrived.

It's all too easy for this important fact to escape notice until too late. Because of abnormal demand the problem of excess steel inventories has been no problem at all for several years. Now there are signs of a change. The situation is still uncertain and some steels remain critical. But when the turn comes, even today's "normal" inventories may loom large.

As warehouse stocks improve, you can safely extend a conservative buying policy over an increasing variety of steel requirements. Warehouse stocks serve as your steel inventory reserve, allowing you to keep your own inventory at a practical working level. Thus you avoid the continued tie up of capital and minimize the risk of an inventory loss.

The Ryerson organization is particularly well equipped to work with you in keeping your inventory streamlined. Each of thirteen Ryerson plants has large stocks of carbon, alloy, and stainless steels in spite of some unbalance from a size standpoint. Each is served by high speed cutting and handling facilities—and staffed by experienced steel men.

So don't let changes in product design or market conditions catch you with your inventory too high. Steel overstocks can easily become an expensive luxury. We suggest you watch your inventories and keep in touch with us for your current requirements.



Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

RYERSON STEEL

The IRON AGE

April 5, 1949

NEWSFRONT

► Reflecting effects of steel plant expansion, average capitalization per ton of ingot capacity is more than 15 pct higher today than it was 2 years ago. Translated into money, there is over a billion dollars more invested in the industry now than there was at the end of 1946.

► A solder with an indium base has been developed for hermetically sealing glass to metal or glass to glass. The solder is applied at about 260°F. Users say that the joint doesn't pull loose under vibration.

► Twist drills will be the product of a new company, N. V. Borenfabriek, which has been formed by Belgian and Netherlands interests with American participation. A plant will be built in the works of the N. V. Stoomolieslagerij van J. van Vollenhoven. Republic Drill and Tool Co. will survey construction and furnish technical help. Plant is expected to be finished about the middle of the year and will furnish bulk of requirements of Benelux countries which formerly depended on imports.

► A continuous fusion operation for preparing charge and feed ore of optimum size and density for openhearths has been successfully used on more than 1000 tons of iron-bearing metals. Conversion costs approximate those of downdraft sintering processes.

► The use of unemployment figures in gaging the trend of buying doesn't give the whole story. Some industrialists point out that the shorter working week in some industries is just as important as layoffs. This means less spending.

One industry being watched closely is automobiles. If top output is continued and there is not enough buying later in the year, the steel industry will find one of its mainstays becoming conservative in steel buying.

► Total inventories of steel companies at the beginning of this year were about 19 pct higher than they were a year previously. Some $80 million more was tied up in scrap stocks and that market today is feeling the effects of mill action to more than wipe out this differential.

► Sonizon, a non-destructive method of measuring thicknesses, is being used by GMC in Cleveland to measure the thickness of the silver deposit on the wearing surfaces of friction bearings. This ultrasonic method is refined application of Sonigage testing methods originally developed by GMC.

► Within 30 days most steel warehouse inventories will be in the best shape since 1941. In some sectors rails are being offered warehouses for the first time in 6 years and the first wide plates in several months are coming through.

In the Midwest there is a move afoot to cut the prices on cold-rolled products unless some method can be found to cover a wider sales area. Availability of cold-rolled products, low volume and high selling costs are responsible.

► Swedish electrical engineers are expected to shortly reveal results obtained with the use of stirring coils attached to the bottom of electric arc furnaces. These coils are reported to give a pronounced stirring action to the bath in arc furnaces, without affecting the slag.

► According to an agreement signed by France and Italy, a customs union between the two countries is to become effective within a year. The agreement aims at an economic union within 6 years.

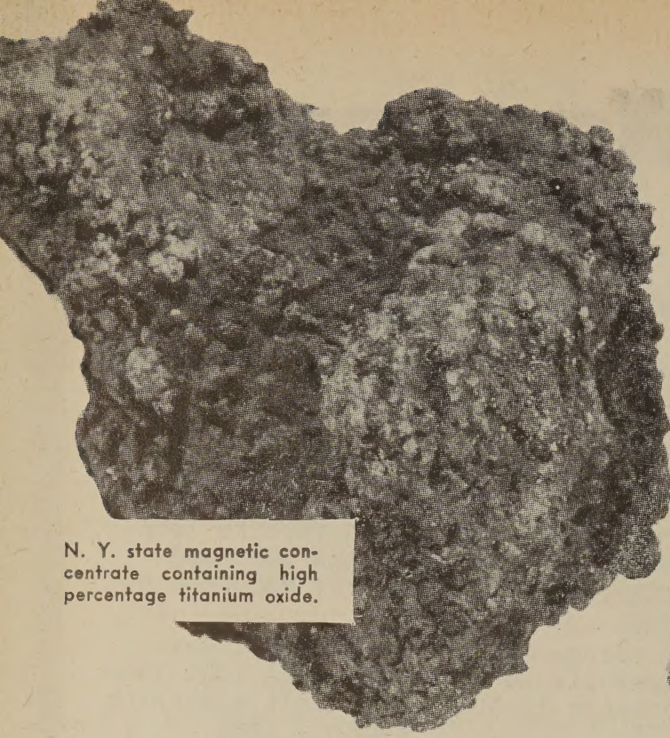
► Cupola stack emission control is getting more and more attention as communities clamp down on air pollution. One corrective system is patterned after that used for blast furnaces, involving closed top operation, a dry dust catcher, a washer to remove small particles.

► It has been whispered rather loudly that John L. Lewis will try for a 30-hour week and 50¢ a ton royalty for pensions. An extended strike would hit the steel industry as usual because of the need for coke to support the high operating rate. With the economy on the downtrend any tieup in coal or steel may have a stronger deflationary effect than those of recent years when inflationary factors were accentuated.

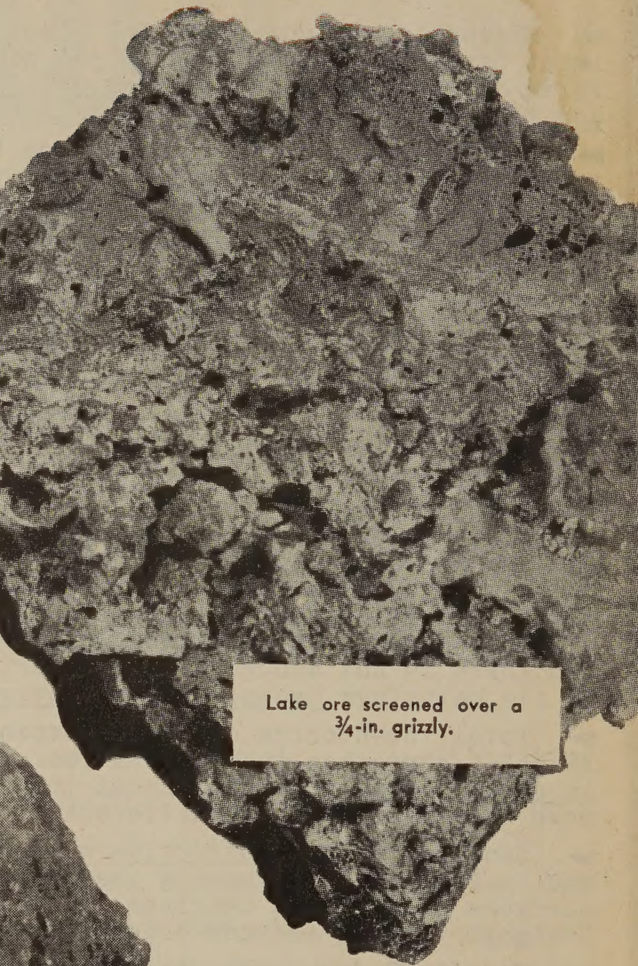
► The cold practicalities of politics are making the going rough for Riverlake Belt Conveyor Lines, Inc., the "rubber railroad," in the Ohio legislature.

► The government has been using a practical type of moral suasion to induce aircraft engineering personnel to move to plants where they are needed. The engineer is simply told where the government is placing contracts, the implication being that this is where his future is.

Fused Ore

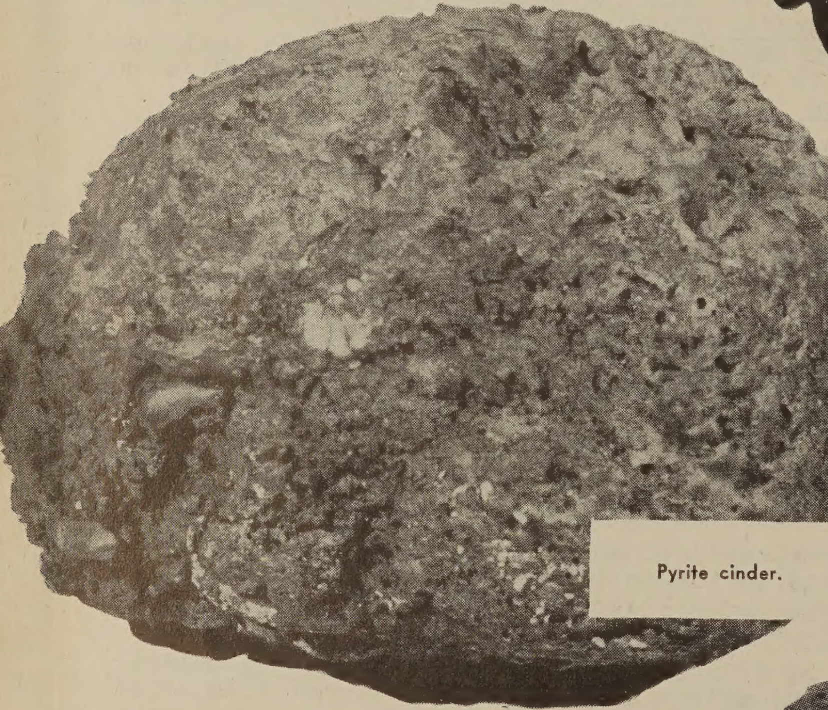


N. Y. state magnetic concentrate containing high percentage titanium oxide.



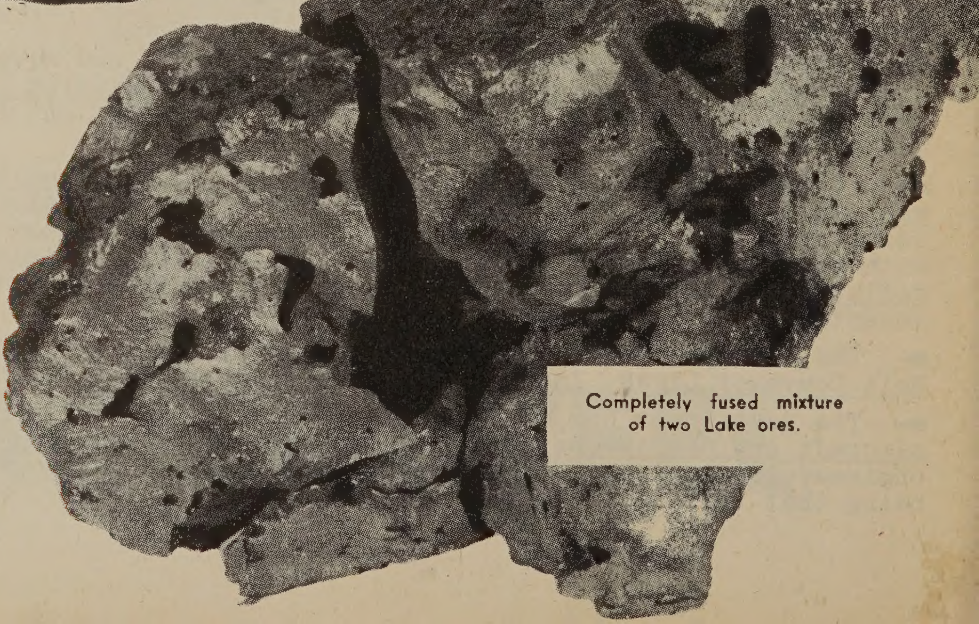
Lake ore screened over a ¾-in. grizzly.

Specimens illustrated on this page and on the facing page are full size.



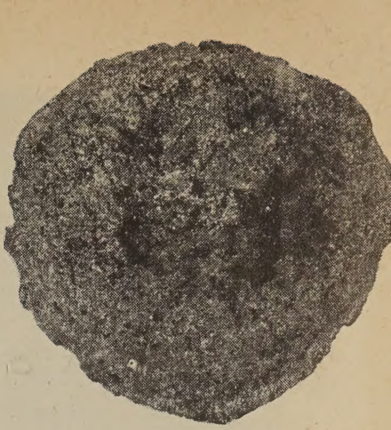
Pyrite cinder.

SPECIMENS of fused product made in the rotary kiln are shown here full size. Products illustrated on opposite page were made from flue dust and sludge.

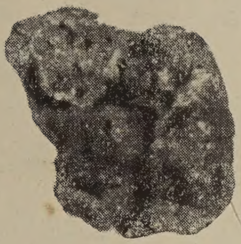


Completely fused mixture of two Lake ores.

for the Openhearth



By E. S. KOPECKI
Metallurgical Editor,
THE IRON AGE

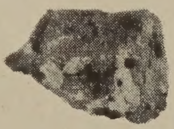


A continuous fusion operation, using iron-bearing materials of any degree of fineness as raw material, has been developed for the production of charge and feed ore of sizes and densities best suited for the openhearth process. Pilot plant experiments conducted successfully on more than 1000 tons of various grades of iron-bearing materials indicate the efficiency of the process, at conversion costs approximating downdraft sintering processes. A description of the plant and its products is given by the author.

A CONTINUOUS fusion process, using iron ores of any degree of fineness as raw material, the product of which is suitable for both openhearth charge and feed ore and blast furnace charge, has been developed for the Great Lakes Steel Corp. The term fused ore is used to differentiate the product and the process from downdraft sinter and nodules, and also because the ore is actually fused, either partially or completely. In the latter case it may be cast into molds of any desired size or shape. While the product is intended primarily for openhearth use, variations in procedure make possible the production of a product suitable for blast furnace use. The apparent density of both types of product is 4.0+.

In order to develop the potentialities of the process and product, a small plant, 50 to 100 tons per day capacity (see figs. 1, 2 and 3) was built and operated at the Hanna Furnace Corp., Buffalo, under the supervision of Lewis E. Lindemuth. The plant operated during 1947 and 1948 during which time suitable openhearth ore was prepared from various materials, including Lake ore fines in various grades, flue dust, gas washer sludge or sump dust, magnetic concentrates, pyrite cinder and aniline sludge. Some of these materials were of a fineness of more than 60 pct through 325-mesh.

Based on a French method known as the Follsain sintering process, which is claimed to have never been developed successfully, the fused ore technique has been carried out at Hanna Furnace Co. in a rotary kiln (fig. 1). The ore and fuel bins, fuel being either coke breeze or anthracite coal, are constructed in such a manner that, as shown in fig. 2, their contents are fed onto a belt conveyer with table feeders. The belt conveyer discharges into a pug mill for mixing, from where the mixture is discharged into a bucket elevator and lifted to a chute down which it passes by gravity to the rotary kiln.



The charge passes down the kiln, and when within 3 to 5 ft of the discharge end, a blast of air, preheated to approximately 1300°F, is directed downward on the preheated charge at a sufficient pressure to agitate the material through the depth of its bed. The preheated air striking the preheated ore and fuel generates almost instantly a temperature sufficiently high to fuse the ore. The products of combustion passing up the kiln preheat the ore and fuel as the latter moves down the kiln.

Adjacent to and paralleling the lining of the kiln, there is permanently located a water-cooled steel knife-edge, see fig. 1, which cuts from the lining any partially fused ore adhering to the lining. Pieces of semifused ore, scraped from the lining by the cutterbar, drop back into the fused, or semifused, ore and so build up into sizes suitable for openhearth use.

An alternative procedure is to completely fuse the ore by the addition of a slight excess of fuel so that the ore leaves the kiln in liquid form and

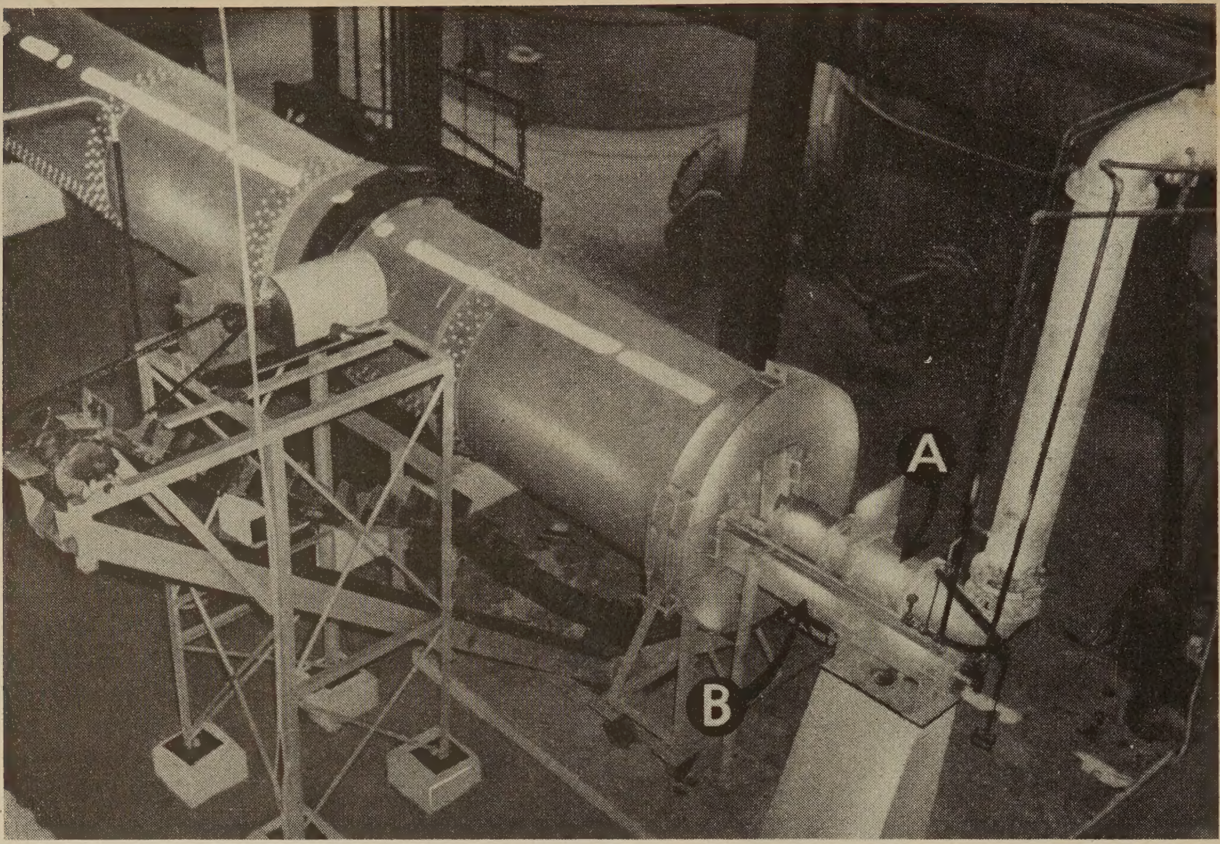


FIG. 1—View of the discharge end of the kiln, showing the hot-blast pipe (A) and the water-cooled knife-edge (B). The scraper conveyer was later changed to a pan conveyer for receiving fluid ore, and the adjustable metal end hood was replaced with brick (see fig. 3) after proper location for the blower was determined.

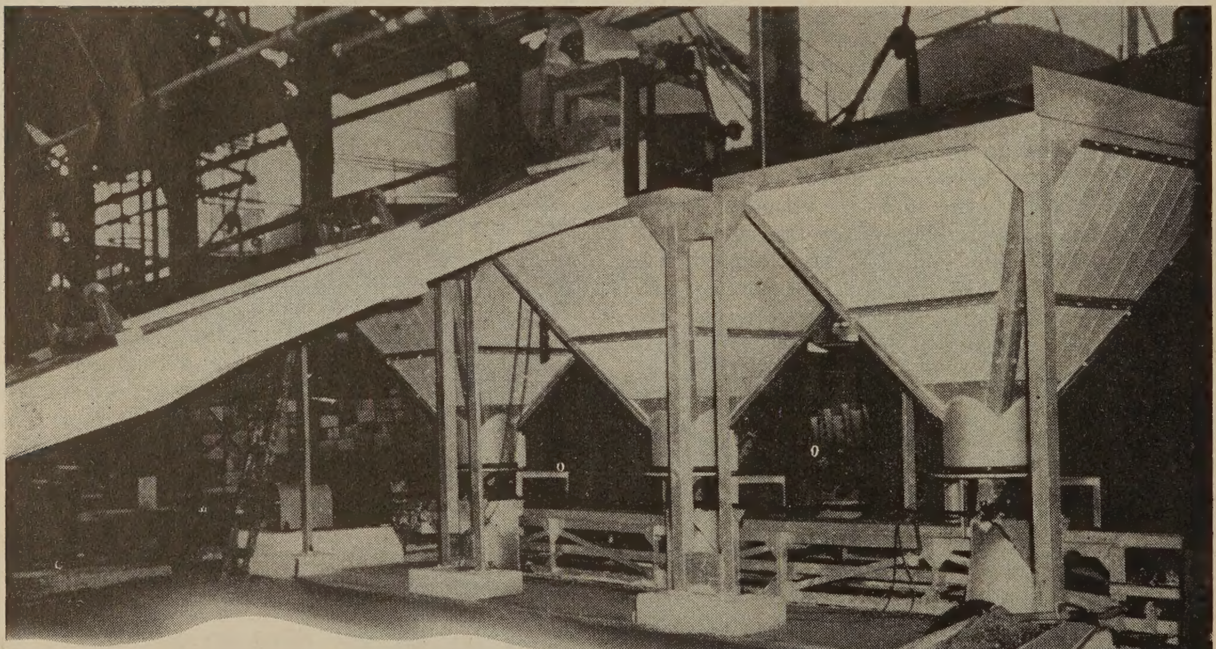


FIG. 2—Another view of the Hanna installation showing the bins, the feeder table, the belt conveyer under the feeder table, and, at the extreme right, the bucket conveyer which receives the charge from the belt through the pug mill.

solidifies in the pan conveyer to the size and shape of the pans used. From the pan conveyer the ore passes over a series of screens to separate it into different sizes: Over 4 in. is considered as openhearth feed ore; between 4 and 1 in. as openhearth charge ore; between 1 and ⅛ in. as blast furnace ore; and under ⅛ in. as returned fines (the latter occurs during interruptions to the process, caused by stoppages).

An externally-fired recuperator is used for preheating the blast. The most economical fuel, in a steel plant would be blast furnace gas. Instruments record the temperature of the air blast and the temperature of the exhaust gases (the latter temperature averages 500°F). Pyrometer couples are inserted throughout the length of the kiln at 10-ft intervals and temperatures recorded hourly to show the preheating stage arrived at as the material passes down the kiln.

When fuel is added in excess of that required for fusing, the product consists of metallic iron and iron oxide. The iron content of the product, resulting from materials normally carrying 50 to 55 pct iron, can be increased to as much as 75 pct.

A structural study of various grades of product is presented in fig. 4. The white areas represent metallic iron, the gray regions indicate iron oxide, and the black areas represent voids.

In all, more than 1000 tons of flue dust and other iron-bearing materials were successfully processed. Success in obtaining a product suitable for the purpose intended, when made from different types of iron-bearing raw materials, was found to depend upon control over the following factors:

(1) Temperature of preheated charge when it reaches the point where the air blast strikes it.

(2) Reasonable uniformity of blast temperature. The temperature can range from 1250° to 1500°F, but should be constant at any temperature within this range.

(3) A blast pressure that should be sufficient to agitate the charge in the kiln to its complete depth. Pressure depends upon depth of charge and upon nature of the ore being fused; heavy magnetites demand the highest pressure and gas washer sludge the lowest, of the types tested, due to the difference in bulk density.

(4) Blast volume, which depends upon the fuel used, and which averages 100 cu ft per lb fixed carbon (volume measured at atmospheric conditions).

(5) Preheat temperatures and size of product, both of which are controlled by varying the rotating speed of the kiln. High speed brings the material through the kiln at a lower preheat and results in a smaller size of product; low speed has the opposite effect.

In order to overcome this two-fold influence of

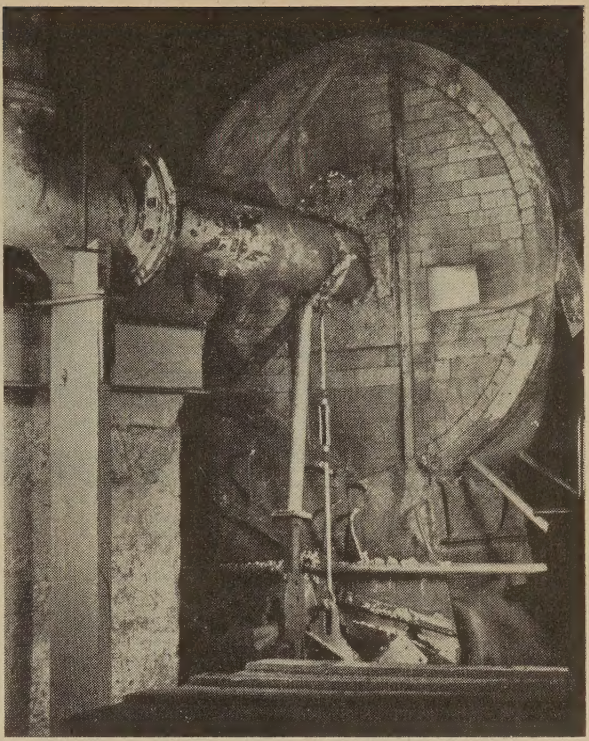


FIG. 3—Closeup of the discharge end of the rotary kiln.

PILES of fused ore, classed as openhearth feed ore, produced in the rotary single kiln at Hanna Furnace Corp., from Mesabi ores.

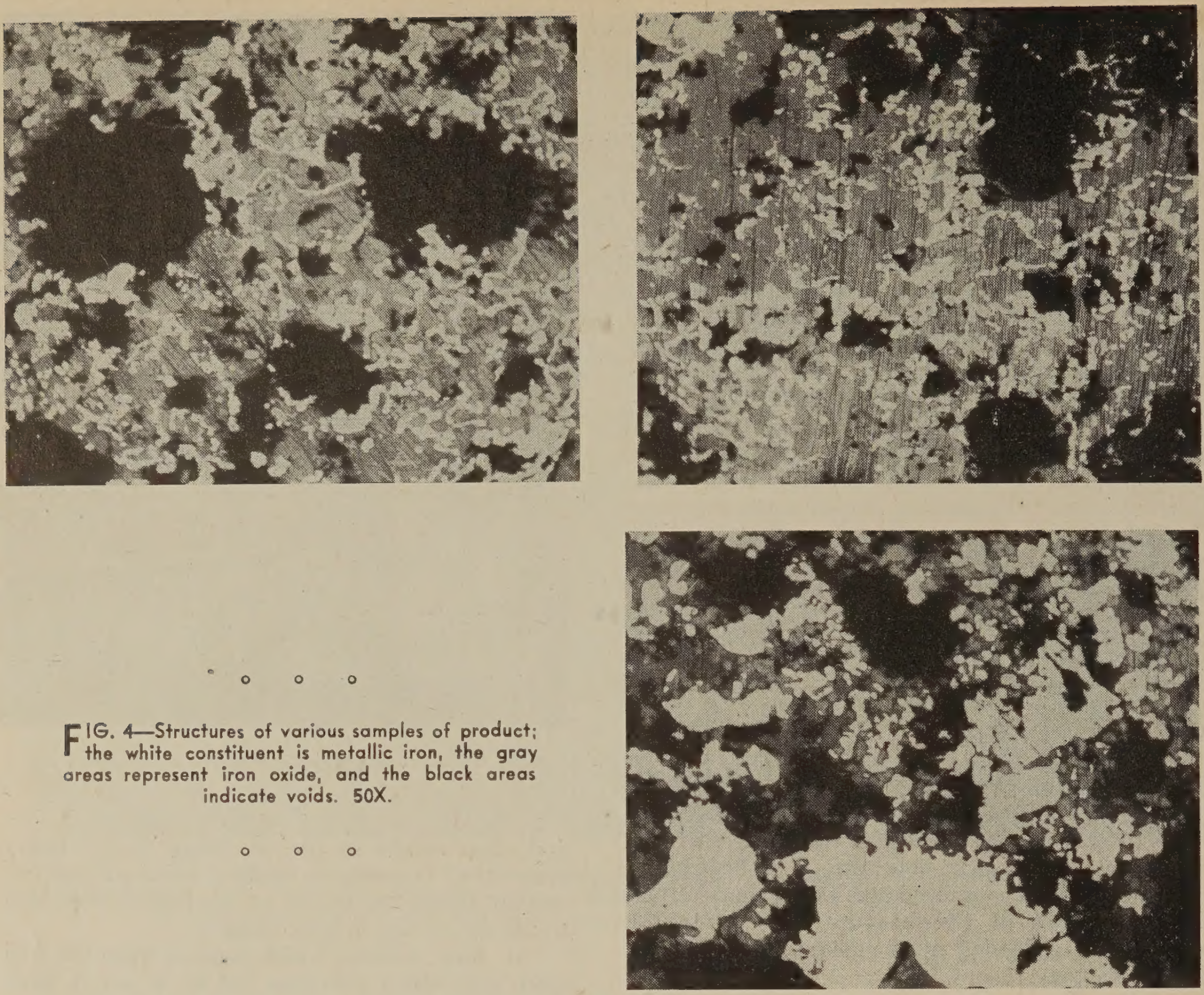


FIG. 4—Structures of various samples of product; the white constituent is metallic iron, the gray areas represent iron oxide, and the black areas indicate voids. 50X.

speed of kiln on both preheat temperature and size of product, a kiln of two sections of different diameters, independently driven, is recommended. This type construction will make possible regulation of preheating temperature without affecting size of product. This is most important to the process, since different types of ore possess different degrees of refractoriness and require different preheat temperatures.

A second important reason for the double-kiln is that in a rotary kiln material segregates according to size and specific gravity. Fuel is generally larger than the ore and of less weight, and, with certain grades of material, the fuel will segregate to the top surface and will not be sufficiently mixed with the ore for best economy and uniform preheat. By dropping the ore and fuel from the smaller diameter section (preheat zone) into the larger sized cylinder (high temperature reaction zone), the two components are remixed before passing under the air blast.

In a double-diameter kiln capable of treating 500 gross tons per day, the estimated size is a preheating section 8 ft in diam and 80 ft long, discharging into a reaction section 14 ft in diam and 14 ft in length. Each section is driven independently with variable speeds ranging from ½ to 2½ rpm. The degree of preheat would be determined by the speed of the material through the preheating section of the kiln; and the second section would be independently driven for control of size of product, high speed giving a smaller size and low speed a larger size.

Another advantage to the proposed double-kiln is that the water-cooled knife edge passing through the reaction section could be supported on both ends instead of cantilevered, as in the case of the single-kiln Hanna Furnace pilot installation. Also, air, oxygen or other gases could be introduced at the junction of the preheating and reaction sections at times when elimination of certain oxidizable impurities is desired on a larger scale than normally encountered. Other advantages of the proposed construction are: (1) Additional fuel can be added at the junction when, in event of delays, the preheat temperature falls below that required, and (2) chemicals for any special purpose could also be added at this location.

* * *

Western Metal Congress . . .

Los Angeles to Be Host, April 11 to 15, to 6th Western Meeting

THE sixth Western Metal Congress and Exposition, to be held in Los Angeles April 11 to 15, will feature a comprehensive program of technical sessions prepared by the western chapters of five national technical societies, and an exhibition of metalworking equipment and supplies by 200 companies.

The congress, under the general chairmanship of E. R. Babylon, Kaiser Co., is sponsored by the American Society for Metals and 17 cooperating societies and is designed as the western counterpart of the Metal Congress held in the east each year.

Individual technical programs are being developed by the American Society for Metals, the American Welding Society, the American Foundrymen's Society, the Society for Non-Destructive Testing, and the Metals Division of AIME. The sessions will be held in both the Hotel Biltmore and in meeting rooms at the Shrine Convention Hall. Chairmen of the various societies arranging these programs are: Chairman, American Welding Society, E. O. Williams, Victor Equipment Co., Los Angeles; chairman, American Institute of Mining & Metallurgical Engineers, Metals Division, Leo Shapiro, Douglas Aircraft Corp., Santa Monica; chairman, American Foundrymen's Society, L. O. Hofstetter, Brumley Donaldson Co., Los Angeles; and chairman, Society for Non-Destructive Testing, Justin Schneeman, X-Ray Products Corp., Los Angeles.

Plant tours have been arranged for the plant of C. F. Braun & Co., manufacturers of pressure vessels and other oil country equipment, and Consolidated Western Steel Corp.

The equipment exhibition will be held daily in the Shrine Convention Hall, where two floors will be occupied by the displays. A highlight of the congress will be a dinner-dance to be held at the Biltmore Hotel on April 14.

Requests for hotel reservations should be addressed to Allen K. Pollock, Manager, Convention Bureau, Los Angeles Chamber of Commerce, 1151 South Broadway, Los Angeles.

Societies Cooperating in the Western Metal Congress and Exposition

American Institute of Electrical Engineers
American Institute of Mining & Metallurgical Engineers
American Chemical Society
American Foundrymen's Society
American Petroleum Institute
American Society of Civil Engineers
American Society of Mechanical Engineers
American Society for Metals
American Society for Testing Materials
American Society of Tool Engineers
American Welding Society
National Assn. of Purchasing Agents
Pacific Coast Electrical Assn.
Pacific Coast Gas Assn.
Purchasing Agents' Assn. of Los Angeles
Society of Automotive Engineers
Society for Non-Destructive Testing
Western Oil and Gas Assn.

Broach Designed For Two Pieces

ON a special serrating job, it was found economical to design and build a broach for just two pieces. The two pieces to be produced were cast aluminum bracket plates 22 in. long x 1¾ in. thick. It was necessary to machine a total of 48 90° serrations in a 1½ in. diam hole, located at one end of the casting. This serrated hole had to be machined in an exact center-distance relationship to a round hole machined at the other end of the plate.

It proved to be more practical and economical to manufacture a broach for obtaining the required high degree of accuracy of serration angle and spacing than to try to form the serrations by some other methods of machining, even though only two plates were to be turned out.

The broach, as designed and produced by Colonial Broach Co., Detroit, is 22 in. long, with 8 in. of cutting teeth. The broach is of high speed steel, heat treated to a hardness of Rc 62 to 64, then surface treated and polished.

· · Control of Cupola

By JOHN F. DRAKE

and

THEODORE G. KENNARD,
Consulting Metallurgists, Los Angeles,

and

W. A. SAYLOR,
Chief Metallurgist
Consolidated Western Steel Corp.,
Los Angeles

IN 1947 the State Legislature of California passed an enabling act which allowed counties to set up Air Pollution Control Districts, adopt rules and regulations, and enforce them. In October of that year Los Angeles County set up an Air Pollution Control District and subsequently adopted a set of rules limiting the discharge from various types of stacks, including cupolas, to the following: Particulate matter, 0.40 grains per cu ft at standard conditions of temperature and pressure; lead, 0.035 grains per cu ft; zinc oxide, 0.035 grains per cu ft; sulfur compounds, 0.2 pct by volume, and smoke, less dark than No. 2 Ringelmann chart.

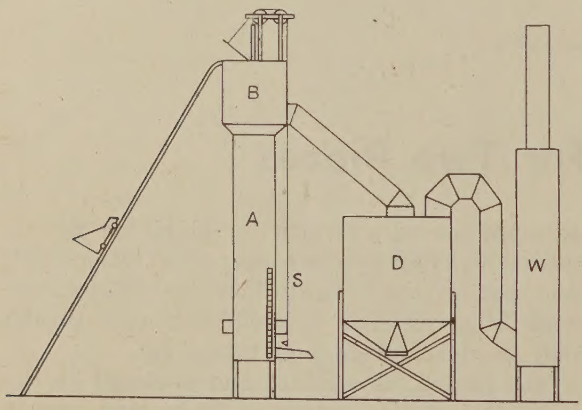


FIG. 1—Essential features of the Kennard-Drake installation are shown here. The cupola stack is shown at A; B is the charging bell; D is the dry dust collector; W is the wet washer, and S is the stock line indicator.

It is obvious that unless the Air Pollution Control District modifies its rules materially, every foundry which continues to operate a cupola must necessarily remove the particulate matter and reduce the smoke to the degree required by these regulations.

It would appear that a successful method of cleaning up the cupola gases could well be patterned after the tried and proven installations so long used by blast furnace operators. This would require (1) Operation with a closed top to confine the gases and prevent combustion in the stack, (2) removal of the large particulate matter in a dry dust catcher, (3) washing the gas adequately to reduce the particulate matter to less than 0.4 grains per cu ft, and (4) combustion of the cooled and cleaned gas to reduce the smoke.

Such a system should be comparatively simple in operation. Consumption of water would be low, perhaps less than 10 gal per 1000 cu ft of gas, and the results should be acceptable to the air pollution control authorities.

The question may arise: What effect will these new regulations have on the foundry industry? The open top cupola, in spite of its high melting efficiency, seems doomed except in those places where no restrictions are placed on the emission from the top. This means the elimination of many of the small foundries in the large centers of population. It will require

Stack Emissions

The trend to establishment of air pollution control regulations by local governmental agencies is focusing new attention on the problem of controlling stack emissions from such units as cupolas. This article describes an installation, involving a closed charging bell, dry dust collector and a wet washer, which results in stack emissions within the limits set by the Los Angeles County air pollution control authorities. Data are also given on the nature of the matter collected by this system.

VIEW of the cupola exhaust from the washer. Photo was taken with cupola in operation.

a slightly higher capital investment by the foundries which continue to operate cupolas. Many of the larger operators will, no doubt, install hot blast equipment, which, once the gas is confined, can be done at a slight increase in cost. The foundry will become a cleaner place in which to work, and quality in general should improve.

Following extensive investigation, plans were completed to install a closed-top charging device, together with a dry dust catcher and a gas washer, in accordance with plans developed by Kennard and Drake. The equipment, shown in fig. 1, was to be installed on the No. 3½ Whiting cupola of the Consolidated Western Steel Corp. A burner was to be added if the smoke persisting after the washer was still too dark due to carbonaceous matter.

So little was known at this time regarding the probable amount of dust composing the various particle sizes emitted from this particular cupola under different operating conditions that it was thought best to design, build and operate a full-sized closed-top charging system at once, rather than to spend a great deal of time in preliminary testing while operating the regular old-type open-top cupola. This procedure would not only solve the particular problem for this foundry but would also make it possible to obtain data on the operation and performance of a cupola under such closed-top conditions.

Among the various factors considered in designing the equipment was that the system must provide for the cleaning of the gas and the collection of particulate emissions without requiring extra blowing equipment and the top must be rigid enough to withstand the shock of a 1000-lb metal charge. The top should operate automatically and its weight should be such as

FIG. 2—Closeup of charging bell, showing stock line indicator in place.

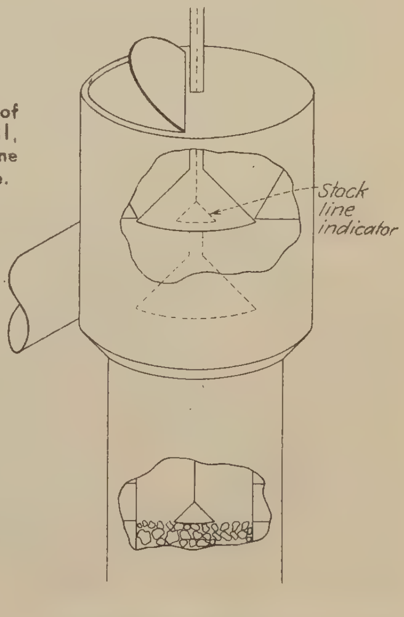


TABLE I

Screen Analysis of a Typical Day's Run

Mesh	Pct
+5	0.1
−5 + 8	1.1
−8 + 20	10.7
−20 + 35	20.4
−35 + 100	57.0
−100 + 200	7.5
−200	3.2
	100.0

not to require the use of additional reinforcement.

It was also desired to provide a means of measuring the height of the stack column at all times (see fig. 2).

The dry dust matcher was designed of a size and construction that it will not only withstand the high temperatures encountered at times, but will remove the coarser particles from the gas stream without materially increasing the static pressure.

The efficiency of the gas washer in such a system needs to be only barely enough to remove the particulate matter to the point at which 1.25 grains per cu ft of blown air are left in the washed gas.

This figure was obtained on the basis of the following reasoning: If the average open-top cupola with a charging door which permitted dilution of the stack gases with air in the ratio of 3:1 up to 5:1 or more (1 part gas to 3 or 5 parts air) was permitted by the air pollution control authorities to operate with a total emission of 0.4 grain particulate matter per cu ft, then an installation with a comparable 0.3 grain or less would not be in violation. Furthermore, if the regulations were tightened subsequently, the flexibility of the installation was sufficient so that only the washer would need to be modified in order to meet the new specifications.

A baghouse was also considered in place of the washer, but this idea was rejected in view of the higher cost of installation and the probable much higher cost of maintenance due both to the high sulfur content of the particulate matter and the high temperatures encountered at times.

On July 10th the local air pollution control office issued an experimental permit to install the equipment as designed. On Aug. 1 production was started with the cupola operating with the closed top, dry dust collector and the gas washer. It is interesting to note that until Aug. 18 the cupola was operated without the stockline indicator. This device was first used on that date, and its value became apparent at once since the quality and smoothness of the operation improved daily thereafter.

The following data on the operation of the cupola cover the period from Aug. 1 to Oct. 12, 1948. The equipment was used during all this time and is still in regular service.

The charge consisted of 100 pct scrap, broken to 18 in., with coke, limestone, ferrosilicon, ferromanganese and soda ash.

Thermocouples were placed in 5 positions in the gas stream and wired so they could be read at a central station. The locations were as follows: (1) Exit from charging bell; (2) entrance to dry dust catcher; (3) outlet from dry dust catcher; (4) entrance to gas washer, and (5) exit stack from gas washer. The temperatures observed were in line with expectations based upon recorded data.

Air and gas velocities and volumes were measured with a Pitot tube, since the cupola was not equipped with an air weight control. Air was furnished by a Sutorbilt positive type blower.

Provision was made for taking gas samples at a point between the dry dust collector and the washer, so that composition analyses could be made. The total emission collected by the dry dust collector could be measured and sampled after each day's run, and sampling for particulate matter was made both on the washer water at regular intervals and in the exit gas flow after the washer.

TABLE II

Distribution of Particles by Magnetic Characteristics

Size	Magnetic, Pct	Nonmagnetic, Pct
−5	84.3	15.7
−5 + 8	64.3	35.7
−8 + 20	53.2	46.8
−20 + 35	48.1	51.9
−35 + 100	55.5	44.5
−100	62.3	37.7

Test runs have shown a surprising regularity in the amount of dry dust collected, even though the scrap charged has varied considerably in character at times. The average amount of dry dust collected varies from 1.9 to 2.5 grains per cu ft of air blown into the tuyeres, or 79,000 to 104,000 grains (11.3 to 14.9 lb) per ton of iron charged. A screen analysis of a typical day's run is given in table I.

Much of the material represented is distinctly magnetic in character. Although a sharp distinction cannot be drawn between magnetic and definitely nonmagnetic particles, classification on the basis of hand-picking with a powerful permanent magnet separated the material in the proportions given in table II.

Measurements were also made of the relative amounts of heavy and light particles in these various sizes, using liquids of sp. gr. 1.81 and 2.90 as the separating medium. These are given in table III.

These density measurements are not at all in agreement with the popular conception that the larger particles emitted from an iron cupola stack are primarily iron oxide.

Chemical analyses of this dry dust showed a surprising amount of lead and zinc, as well as very significant amounts of sulfur. As would be expected, there was considerable variation in the lead and zinc content for different runs, depending, in large part, on the nature of the scrap charged. An average range of values is given in table IV.

These quantities of sulfur, which are extractable by boiling with dilute sodium hydroxide and water, respectively, are considered to be very significant, since they indicate that these emission particles can be the direct cause of much of the severe corrosion and chemical attack which are commonly known to occur in and near iron foundries.

Varying amounts of water have been used in the washer, depending upon the degree to which it was desired to clean the gas. Considerable variation in the amount of particulate matter in the washer was noted at times, due in large part to variations in the cupola operation and nature of the scrap charged.

Approximately half of the 2 to 2½ grains of particulate matter in the entering gas is removed and carried away by the wash water, using a water consumption of approximately 10 gal per 1000 cu ft of gas. Increasing the rate of flow was found to increase the amount of particulate matter removed. Further economies in the washing process are possible by recirculating the water and, if the air pollution requirements are changed in the future to require additional cleaning, this may be met, first, by increasing the water flow, and then, if needed, a secondary washer of the Theisen Disintegrator type may be used, or even an electrical precipitator.

Screen tests and microscopic examination show that most of the particulate matter removed by the wet washer is very fine, running, usually, from 85 to 95 pct for the sizes below 44 microns (325 mesh).

TABLE III

Distribution of Particles by Weight

Size	Heavier than 1.81, Pct	Lighter than 1.81, Pct
−8 + 20	42.4	57.6
−20 + 35	65.6	34.4
−35 + 100	83.5	16.5
−100	73.0	27.0
	Heavier than 2.90	Lighter than 2.90
−35 + 100	Under 0.1	Over 99.9
−100	6.3	93.7

The particulate matter removed by the wet washer varies considerably in composition from time to time. Table V shows the chemical composition for the solids obtained by evaporating the washings in typical runs. The composition of particulate matter left in the gas after passing through the washer, based on samples obtained by passing the washed gas through a dry impinger and a series of wet impingers, is given in table VI. Although the lead and zinc contents given in the table are relatively high, the washed gas meets the air pollution requirements established by the Los Angeles County Air Pollution Control district.

TABLE IV

Average Chemical Values in a Typical Day's Run

				Sulfur	
	Fixed Carbon	Lead	Zinc Oxide	Alk. Sol.	Water Sol.
Composite + 100 mesh	7.40–13.90	0.21–0.34	0.74–0.87	0.60–0.63	0.40–0.42
Composite − 100 mesh	16.80–22.80	0.34–0.55	1.02–1.51	0.39–0.54	0.23–0.40

Pure gas samples for analysis were easily obtained, and were collected from a sample outlet located between the dry dust collector and the washer. There was no chance for outside air to enter the closed system and contaminate the sample. The CO_2 content showed little change from the beginning to the end of the heat, provided that the charging conditions remained the same. In the absence of accurate gas analyses the coke charge may be seriously off-balance with respect to the wind blown, with no easy way of checking and correcting this condition.

Samples were also analyzed for sulfur dioxide. The content was found to be very low, ranging from 0.0003 to 0.0006 pct by volume.

Among the conclusions drawn from experience to date with this installation are that use of a closed charging bell, a dry dust collector and a washer is a sound, practical method of controlling emissions from a cupola, and that confining the cupola gases by means of the closed charging bell and preventing the influx of extra air through the old type of open charging door has the double advantage of not requiring extra power to pick up the cupola gases for cleaning (since only the original cupola blower is used) and of preventing the dilution of these gases with a large amount of extra air. Preventing dilution with extra air facilitates the cleaning operation since it makes a tremendous reduction in the volume of gases which must be handled.

Use of the closed top reduces the temperatures in the upper part of the stack, with the resulting advantages of producing better cupola operation and maintenance and of producing a cupola gas of lower temperature, facilitating the cleaning and washing operation. Outside of

TABLE V

Typical Chemical Composition of Particulate Matter Removed by the Wet Washer

	Content, Pct
Silica (SiO_2)	19.0–25.0
Alumina (Al_2O_3)	2.0– 4.0
Iron	4.0– 9.0
Lime (CaO)	4.0–11.0
Magnesia (MgO)	2.0– 5.0
Manganese	1.0– 2.2
Lead	2.8– 5.7
Zinc oxide	2.1– 3.8
Sulfur	2.1– 2.4
Loss on ignition	40.0–[illegible]

a somewhat closer sizing of the scrap charge, there is no difference in operations with a closed top. The improvement in results comes largely from a better control of charging practice. The stock line is kept at a predetermined level throughout the melting period, resulting in less coke being consumed uselessly. Tests are to be made in the future to determine the effect of higher top pressures and lower coke ratios.

TABLE VI

Typical Chemical Composition of Particulate Matter in Gas After Passing Through Wet Washer

	Dry Impinger, Pct	Wet Impinger, Pct
Lead	5.94	6.80
Zinc oxide	2.20	2.90
Sulfur	3.54	3.60

Mist Coolant System Improves Cutter Grinding

A MIST coolant system for grinding has been developed as a result of the need for new and improved methods of grinding sintered carbide cutting tools. The advances in carbide milling were marked with improvements in diamond grinding wheels, but it was felt by the Cincinnati Milling & Grinding Machines, Inc., that additional research and experimentation were necessary to determine how to best use these wheels for sharpening sintered carbide cutters.

One of the results of this program was a conclusion that wet grinding has many advantages over dry grinding and the mist type coolant system was one technique worked out along these lines. Wet grinding prevents overheating of the carbide and provides a better surface on the cutting tool. Also it makes possible in most cases to remove more carbide per pass of the wheel, thus reducing the time required to complete the job. While wet grinding has been known to be highly satisfactory, it has been characterized by disagreeable working conditions caused by the coolant splashing on the machine and the operator and the difficulty in seeing the area where the coolant action takes place.

This self-contained mist coolant system permits the coolant to perform its function effectively, but leaves the machine, workpiece and operator clean and dry. Splashing of the coolant is practically eliminated and the operator has a better view of the work as it makes contact with the wheel. Fig. 1 shows the coolant system as it is applied to the grinder. The small, compact attachment consists of a wheel guard of special design that is connected by a flexible tube to a coolant tank, pump and suction fan in a convenient position on the floor. The wheel guard is mounted to the wheel head by means of two studs.

As shown in fig. 1, as soon as the coolant strikes the diamond wheel, wheel speed immediately transforms it into a mist which thoroughly wets the wheel. Then instead of being thrown off, the mist is sucked into the wheel guard and returns to the coolant tank through a large flexible tube.

The aluminum wheel guard supplied with the attachment has been designed for either of two popular types of grinding wheels: Type D12W, 3x⅞x½ in. and type D11W, 4x1¼x1¼ in. Vitrified cup wheels of these same dimensions may also be used and guards for other sizes of diamond wheels can be supplied. Fig. 2 shows the coolant system in place on a Cincinnati tool grinder with a milling head in position to be ground. The rubber tube over the fixture is the return flow for the coolant system and enters the coolant tank placed on the floor beside the grinder.

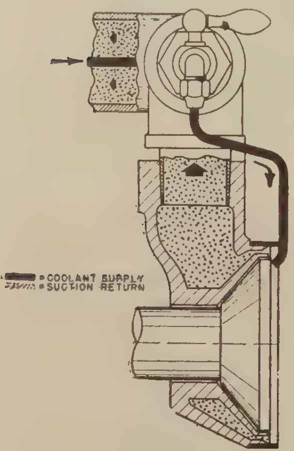
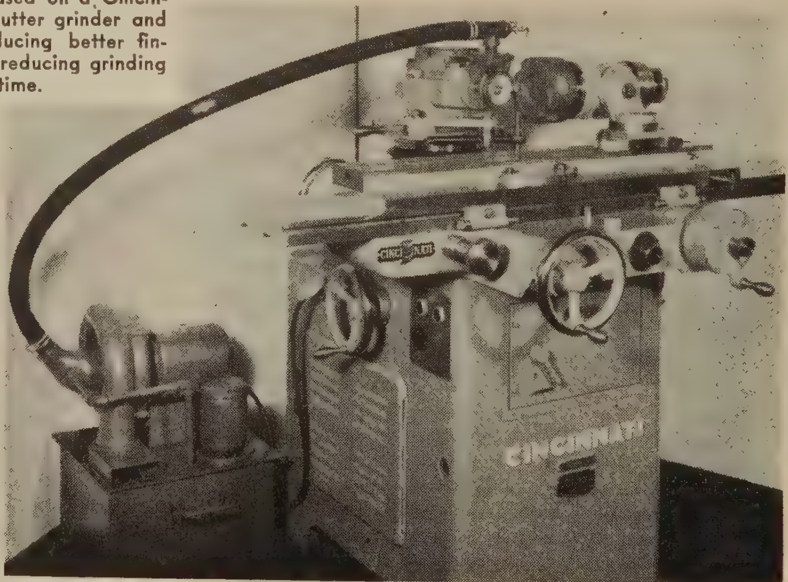


FIG. 1—The new coolant system takes the coolant on a round trip and practically eliminates splashing and gives operator better view of the work.

FIG. 2—Here, the coolant system is used on a Cincinnati No. 2 cutter grinder and aids in producing better finishes and in reducing grinding time.



Cold Forming Stainless Steels

Cold forming of rectangular and non-circular parts and bulging completes the press operation discussions. Annealing, furnace equipment, pickling, lubricants, tool materials and other factors that affect the success of cold forming stainless steels, are appraised in this article, and techniques of handling specific stainless grades are evaluated.

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DRAWING rectangular and other non-circular cross-sections is usually more difficult, the difficulty increasing as the shape deviates from a cup and as the part becomes deeper. The trouble is caused by unequal stress distribution within the blank. In an oval shape, the end sections of the blank have greater compressive movement than do the sides. In rectangular shapes, the corners have excess metal, while the sides have just enough. One condition in drawing rectangularly shaped items is that the limit depth is four to six times the radius of the corner, owing to the distribution of the surplus metal. In redrawing, the radius of the corners is reduced. However, there is a consistent relationship between the radius on the drawn shell and the one proposed on the redraw for blank corner holding strength and the prevention of wrinkles. In fig. 9, the operations consist of a single cupping, followed by an anneal and pickle. It is then sized, trimmed and beaded.

In the first part of this article, the author appraised the various cold forming methods and their applicability to forming specific grades of stainless. Stamping, drawing, bulging, bending, shearing, and other methods of cold forming, were described. Part I of this article appeared in THE IRON AGE.

Bulging involves compression, but is more often associated with deep drawing. Mechanical bulging methods use either a segmented metal die or a rubber punch. In the former, the segments are held together by springs around both the top and bottom ends. In working, the compressive action of the springs causes the segments to move out forming the bulge. A difficulty associated with this method of bulging is that there are slight flats on the surface that are objectionable if the completed item must be highly polished.

Rubber punches eliminate these flat areas, but rubber punches are suited only for limited production. A maximum of 3000 to 4000 pieces are realized before the punch must be replaced. Hydraulic bulging is quite suited for intricate shapes, but correct volume and pressure, proper venting, and the prevention of leakage are hard to maintain.

One recently described bulging application involved the forming of a milk pail. No trouble was experienced in the four draw sequence with anneals after the second and fourth draws. The milk pail was too large for rubber bulging within tolerance, and rubber bulging tools deteriorated rapidly under the high pressures required, with dimensions altering accordingly. Hydraulic bulging was successful, but there was difficulty in the use of oil as the bulging media. Leakage caused the abandonment of this fluid for use in production runs. Water and soluble oil proved satisfactory, expanding the pail while under pressure without the use of the press ram. To avoid the loss of liquid, the pail was inverted at the time of expanding, held by gaskets. The pressure exerted by the liquid produced the required form, after which the liquid ran back to a storage receptacle. The tolerance for the pail diameter was +0.002 in. and the production rate was 50 per hr.

Spinning, closely associated with drawing since it often follows deep drawing, belongs with operations such as bulging, necking, flanging, and beading. As in deep drawing, the spinning stainless steel requires greater pressures and more rigid equipment than spinning low carbon steels. The speed of spinning is also reduced to about 33 pct of that used for plain carbon steels and about 25 pct of that used for the copper alloys. The skill of the operator is a determining factor in the quality of a spun part since individual judgment is necessary to determine speeds, pressures, and the amount of cold work permissible before annealing is necessary.

In spinning, the edge of the article is left untouched until the work is almost completed. This prevents cracking or splitting from the outer edge inward. In some cases, the article is completely spun with a flange, and then it is trimmed and beaded. Spun stainless also has the characteristic of stress cracking, and it is best to anneal between critical spins, especially where there are a multiple number of spins required for reduction. It is also good practice to hold to a minimum the amount of work on the final spin, enough to obtain the benefit of cold work hardness but not enough to risk stress cracking. Violations of this practice often result in cracking during assembly or after the article is in use.

A typical sequence of both deep drawing and spinning operations is shown in fig. 10. The first reduction was about 40 pct; the second reduction was about 30 pct; and the third and last reduction was approximately 22 pct. An anneal was interspaced between each draw. In spinning, the first spin consisted of necking and flanging the top, care being taken to complete most of the reduction in the neck before producing the entire sweep up to the mouth of the item. The second spin rounded the bottom of the item.

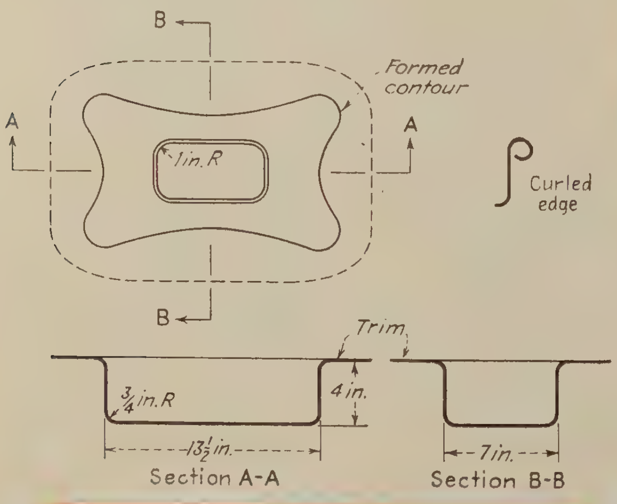

FIG. 9—Drawing non-circular shapes presents metal gathering and thinning difficulties. This annealed 302 stainless form was made by a single cuppling, followed by anneal and pickle and then size, trim and bead. The sheet was 0.035 in. thick.

In the fourth classification of cold forming where a squeezing action is involved, cold heading of wire to form rivets and riveting fall most frequently within this category. Regardless of the stainless steel employed, the material should have a uniform grain structure and maximum values in both toughness and impact strength. To avoid such surface irregularities as seams, splits, and slivers, either centerless ground or cold drawn stock is used.

In cold heading of stainless steels, these analyses, as in other cold forming operations, have greater resistance to deformation. This makes necessary heading machines of greater capacities and more perfect alignment, since any play in the headers will be greatly exaggerated. The energy increase necessary for stainless steels over the low carbon steels is approximately 40 pct, the resistance being apparent in tool life and the ability to fill out difficult head shapes and produce sharp corners.

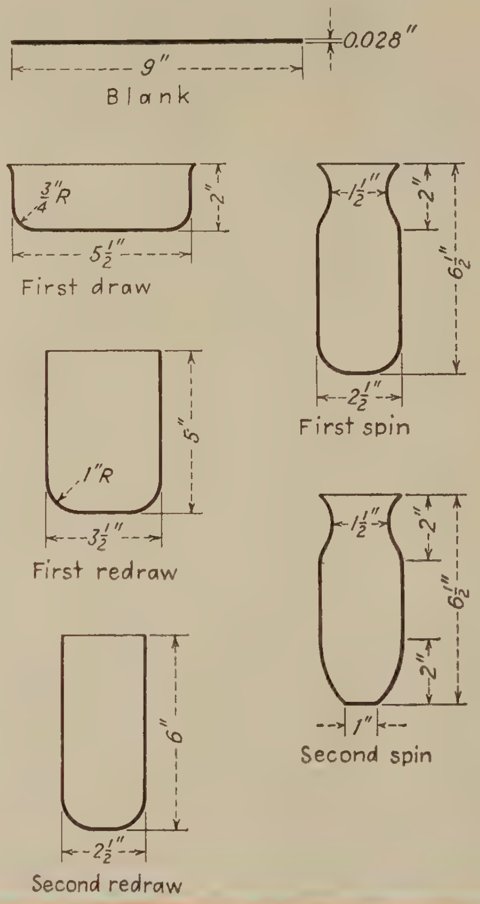

FIG. 10—Spinning frequently follows a deep drawing sequence as shown here. Draws with reductions of 40 pct, 30 pct and 22 pct were followed by two spinning operations, the first consisting of necking and flanging the top and the second consisting of rounding the bottom of the part.

More frequently used stainless steels for cold heading are types 302, 410, and 430, the latter analysis being preferred since it is most easily formed and has a wide range of applications. In structures assembled with rivets, the material should be the same because of differences in corrosion resistance and differences in color. This latter property is noticeable when chro-

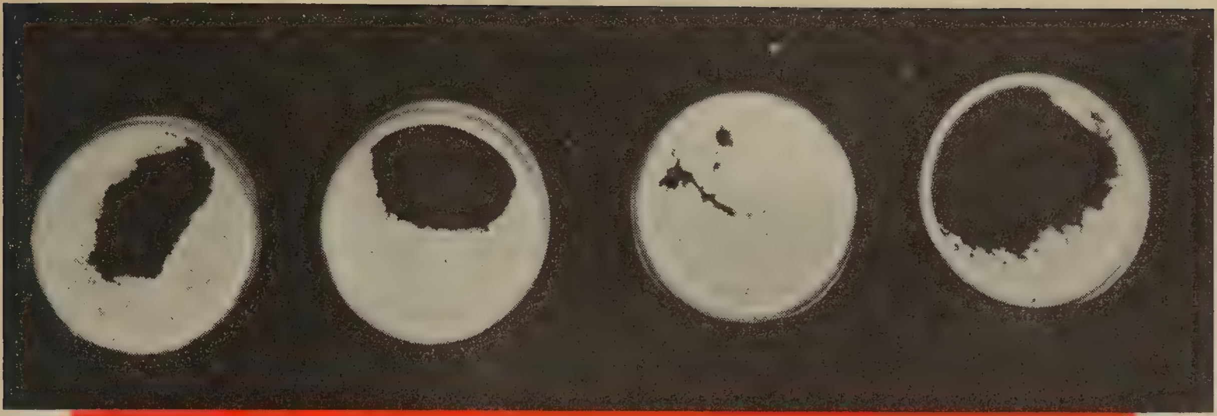

FIG. 11—Absorbed oil from a dirty crate sensitized the bottoms of these parts during the anneal with the result that during pickling the acid attacked the sensitized region and ruined them.

mium-nickel and the straight chromium compositions are placed next to one another. Where structural design permits, welding is normally preferred, this choice being imperative in equipment used for food processing.

While stainless steels are noted for their ductility and workability, any single composition can be worked to a limited degree, beyond which stress cracking may occur. Fortunately, this ductility can be restored by proper annealing so that further work can be performed. In cold working austenitic alloys, slip planes form, the boundaries of which have precipitated carbides. Annealing dissolves into solid solution the precipitated carbides and relieves stresses set up by cold working.

Before annealing, however, preliminary steps are required. The article must be chemically clean, since any carbonaceous matter on the part will enter into the material and form additional carbides. These carbides, depending upon the amount of smut along with the type that is on the article, may appear as a surface condition or may extend throughout the entire cross-sectional thickness of the article. Stainless steel in this condition is termed sensitized. The loss of corrosion resistance is tremendous, this specific type of corrosion being termed intergranular corrosion. It is good practice to have efficient cleaning procedures to remove lubricants. Spray cleaners are efficient, and where soluble lubricants are employed a wetting agent should be added to the cleaning solution to assure complete removal of foreign material. Upon exit from the wash, the articles should be placed in clean, paper lined containers, and the container top should be covered with paper. It is also a good precautionary measure to equip operators that handle clean stainless steel articles, either after wash or before annealing, with clean gloves so that body grease is not deposited upon the work.

Annealing temperatures of most austenitic steels can be within the range of 1900° to 2000°F, whereas, the highly alloyed compositions such as types 308, 309 and 310 have a higher maximum range of 2100°F. The proper temperature is dependent upon the design and weight of each item, and this factor is considered along with the load in determining the time and method of the quench cycle. The method of cooling depends upon such factors as the cross-sectional thickness, composition, design of the item in that particular stage of manufacture, and the method of loading. The austenitic stainless grades normally employed in deep drawing or spinning, type 302 and its modifications, can be quenched under forced air if the cross-sectional area is thin. In the heavier sections, water quench is preferred since the more rapid cooling rate assures the retention of all dissolved carbides within the solid solution. In high alloy types such as 308, 309, 310 and 316, the water quench is preferred if the design will permit the use of this drastic quenching media. Water quenching can be either by immersion or spraying, the latter being used where distortion is a problem. The number and arrangement of the spray heads depend upon the design of the part, the number within a unit loading, and the method of loading a tray. It is important that the supply of water be ample and the pressure sufficient to prevent the formation of a steam blanket that might retard the cooling.

The time-temperature relationship in an annealing cycle is important since high temperatures, extended periods of time within the heating chamber, or a combination of these two factors will produce abnormal grain growth and cause excessive orange peel on the surface of a redrawn article. This is particularly objectionable if the item is to be highly polished. Also, if the part to be annealed has a varying cross-section, the proper time-temperature relationship established for heavier sections may be excessive for thinner sections. If this is a possibility, it is best to preheat the items to a moderate temperature, soak at this temperature for a sufficient amount of time, and then transfer them to the proper annealing heat but with a shorter soaking period than would be normally necessary. The article can then be quenched.

Ferritic stainless steels are not air hardening and moderate temperatures are sufficient for both full annealing and stress relieving.

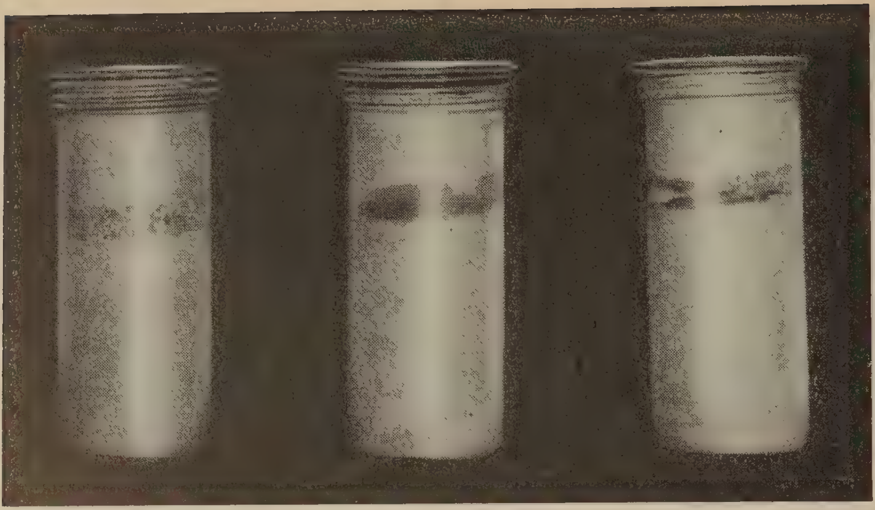

FIG. 12—Another example is shown here of corrosive attack during pickle on the sensitized areas of drawn parts.

Those that contain less than 18 pct chromium are heated to 1400° to 1500°F and air cooled. Higher chromium ferritic stainless steels are heated to 1550° to 1650°F, and water quenched where the design is not too complicated.

The majority of the martensitic stainless compositions are air hardening, precluding the use of a controlled cooling cycle. Annealing of light, uniform sections such as stampings and shallow drawn parts is at a temperature range of 1300° to 1400°F, and parts must be properly soaked at temperature and air cooled. If maximum ductility is required, a temperature of 1500°F is employed with furnace cooling to a temperature below the air hardening range, approximately 1050°F, followed by air cooling. In martensitic compositions that contain columbium, titanium, or aluminum, the air hardening properties are not as prominent. These may be annealed at 1350° to 1500°F and cooled at any convenient rate that will not set up contraction stresses.

The choice of furnace equipment in annealing stainless steels is important not only from the standpoint of uniformity but also in the interest of cost reduction on subsequent operations. It has been within the author's experience in annealing austenitic types that selection of controlled atmosphere furnace equipment established a scale condition that was readily removed. In the use of an oil fired, hand controlled, batch type furnace, a hard tenacious scale formed, undoubtedly the result of alternating oxidizing and reducing conditions within the furnace during annealing. Subsequent removal of this scale by pickling required a minimum of 30 min and had to be followed by a vigorous scrubbing. Upon the use of the continuous furnace using a cracked gas atmosphere, scale formation was loose and easily flaked off. This scale was removed in approximately 15 min, after which a light brushing was necessary. This reduction of time effected a substantial savings.

In annealing items the design of which permits the use of a dissociated ammonia furnace atmosphere, scale removal procedures can be eliminated. Uniformity of furnace is another feature to consider since this uniformity, not only between items in the same charge but also from charge to charge, will realize less rejections on reworked items along with less difficulty in press adjustments during a reworking cycle.

Although there are three principal methods of scale removal, grinding, sandblasting and pickling, the latter is the most widely used method on light gage preformed items. In pickling, a solution should be selected that will remove the scale without affecting materially the underlying metal. Also, pickling solutions should be under control so that not only efficient pickling in minimum time be realized, but also a maximum amount of work be pickled before the solution is discarded. The choice of pickling solutions are numerous, each having advantages and disadvantages. A limited discussion of this phase can be brought about by relating some specific experiences.

Two solutions were used in a test for a specific job, the first a 50 pct muriatic acid bath and the second a 10 pct sulfuric acid bath containing ¼ lb of rock salt per gal of solution. The first solution was placed in an earthenware crock that was immersed in a hot water tank, providing a solution temperature of 150° to 170°F. This pickling agent proved unsatisfactory since the time necessary to obtain clean work was rather erratic along with the realization of metal loss. The etching effect of the acid was noticeable in areas that had relatively loose scale, but parts had to remain in the pickling solution until harder scale formations were loosened. The use of the sulfuric acid solution containing rock salt proved less satisfactory in that pitting occurred, especially when the solution was near exhaustion. Metal loss was also an objectionable feature.

A nitric-hydrofluoric acid mixture (HNO_3, 8 to 20 parts; HF, 1 to 4 parts; H_2O, 100 parts) was operated from 130° to 150°F was provided with a fume hood. This bath was quite successful, even though pitting did occur when the solution approached exhaustion. The workmen objected to the use of this bath since the solution proved irritating to the hands, even though protection was given.

The pickle solution now in use is the hydrofluoric-ferrisul bath; the hydrofluoric concentration being from 1.5 to 2.0 pct and the ferrisul concentration being from 6.0 to 7.0 pct. This bath operated quite successfully, the specific points of interest being: (1) The bath at the operating temperature of 160° to 180°F is nonfuming and no ventilating hood is required. Workmen repeatedly got the solution on their skins with no ill effects. (2) If close control and proper balance of ingredients are made, there is no metal loss, and the appearance of the shells is a dull satin. (3) In the event that the items pickled had been sensitized in a previous operation, disastrous results were obtained, as indicated in fig. 11. Here the sensitized region is at the bottom, caused by setting the items on a dirty crate with no paper lining. The absorbed oil from the crate sensitized the bottoms during the anneal with the result that during the pickling operation there was rapid attack. Another example of corrosive attack by the pickling solution on sensitized areas is shown in fig. 12.

The tank material for the ferrisul-hydrofluoric acid bath can be either of wood or steel plate. However, in each instance, a tellurium lead lining should be provided. Tellurium lead is preferred over chemical lead in that greater service life can be expected under the conditions of contraction and expansion during that period of temperature fluctuation from room to operating temperatures. Where a large tank is employed, tie bolts running along the inside of the tank approximately 2 ft apart will aid in preventing the lead from creeping and aid in service life. A lead steam coil can be used as the heating unit. Other recommendations as to suitable tank linings are carbon bricks or stainless type 316. The latter will become quite fragile and care must be taken in entrance or exit of the basket with the items to be pickled. Stainless type 316 is a rather expensive lining, and if used, a bolted construction is recommended. Basket material is a bolted construction of stainless steel, type 316.

The sodium hydride descaling process is quite popular. This bath consists of commercial sodium hydroxide to which metallic sodium and cracked ammonia are added. The resultant sodium hydride (NaH) is the active agent that performs the pickling at the operating temperature of 700°F. The work is placed in the bath, the time factor being from a few minutes to as much as 20 min, depending upon the condition of the scale. As with the other mentioned processes, chemical control plays a vital role in keeping the bath most favorable for pickling. The sodium hydride, which should be between 1.5 and 2.0 pct, is determined at regular intervals, and rectification is by an addition of metallic sodium. Water quenching directly after descaling blasts off loose scale, and this is followed by a bright dip in dilute nitric acid.

Passivation is recommended to assure the maximum corrosion resistance. This is true to the extent that passivation dissolves any iron particles or other foreign material that may affect the service properties of the item. Where pickling has been performed as the last step of fabrication, additional passivation is not usually necessary. However, if this is not the case, passivation would consist of an immersion in a 20 pct nitric acid solution. As with all types of pickling and passivation treatments, the acid remaining on the treated item is removed by hot and cold rinses.

In press forming stainless steels slow press speeds are recommended, especially in deep drawing the austenitic stainless steels. Slow press speeds not only permit greater reductions per draw because of the slower rate of cold working, but the less instantaneous temperature at the interface between the tool and the work during the working stroke permits the greater retention of the protective lubricating film. Good retention of film, often termed film strength, is necessary in a lubricant to minimize fouling and scoring of the tools and to decrease the frictional effect obtained through metal to metal contact. The choice of the lubricant can be made only by experimental procedures and from past experience, based upon available equipment; severity of forming tool material; the surface condition of tools and the material; and preceding and subsequent operations.

Lubricants available are too numerous to discuss in this article. A general classification can be made that will include the extreme pressure lubricants, the pigmented drawing compounds, the nonpigmented type drawing compounds, and the soap type lubricants. Both the extreme pressure lubricants (usually sulfurized or chlorinated fatty oil or paraffin waxes) and the pigmented compounds (fatty or mineral oils pigmented with whiting, talc, lithophone, white lead or graphite) are efficient. However, difficulty has been encountered in removing lubricant prior to annealing, which not only increased the cost of the operation but caused an excessive number of rejections due to sensitization. The cleaning operation, especially where there are intermediate anneals, cannot be over-emphasized since many

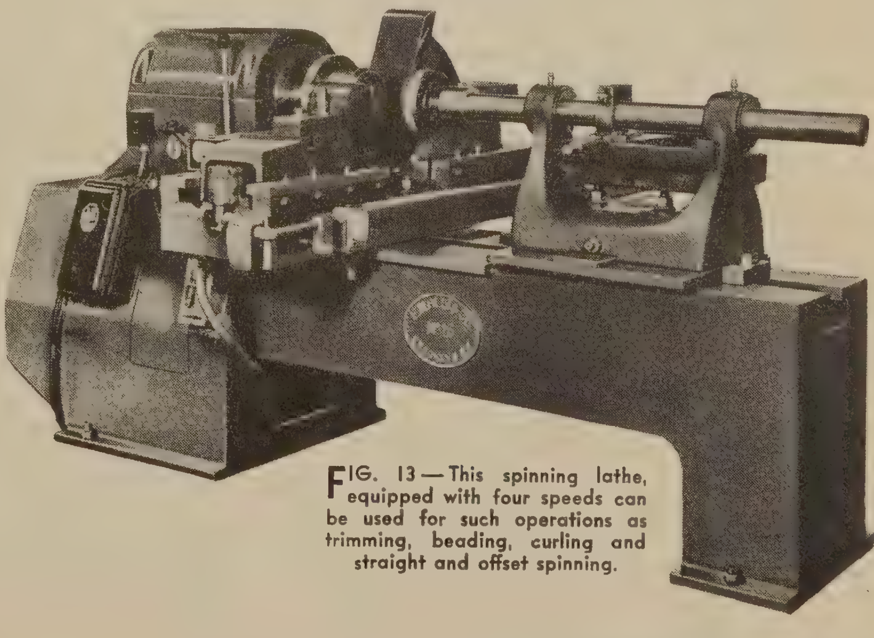

FIG. 13—This spinning lathe, equipped with four speeds can be used for such operations as trimming, beading, curling and straight and offset spinning.

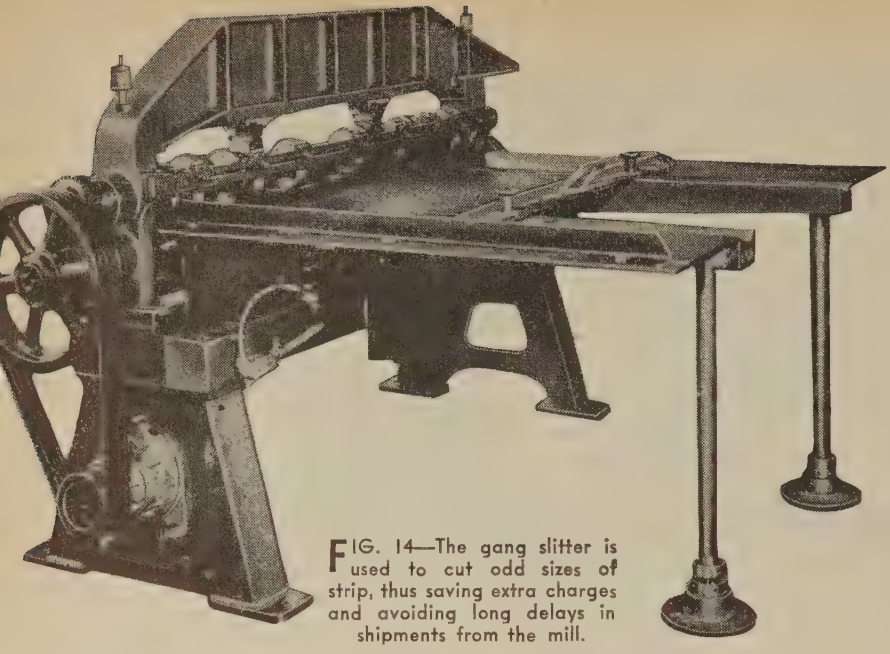

FIG. 14—The gang slitter is used to cut odd sizes of strip, thus saving extra charges and avoiding long delays in shipments from the mill.

difficulties fabricating austenitic steels can be traced to inefficient or difficult cleaning problems. For moderate to severe drawing, the water soluble, dried film type of lubricant has replaced the pigmented type. It is used with considerable success, realizing good tool life, ease in cleaning, and low rejections.

In spinning, recent investigations revealed no satisfactory substitute lubricant equal to yellow bar soap on the basis of both cost and efficiency. At times, difficulty may be encountered in that the soap may become dry and brittle, but a simple humidifying conditioning will develop its original plasticity. Nonpigmented compounds, usually the fatty oils with suitable additions, are diluted with mineral oil, their consistency being dependent upon the operation, and are used successfully on less severe operations such as blanking, punching or perforating.

In a failure in a drawing sequence, many factors must be considered before change is made. A change in lubricant may not improve results and the difficulty may be elsewhere. Calculated reductions may be too severe, tool design may be at fault in the form of too sharp radii of fillets, selection and heat treatment of tool material may not be the best, or production tools may be improperly maintained. Any of these factors may effect the success of the forming operation.

Tool materials employed in cold forming stainless steels are rather broad, the specific choice being based upon the operation involved and the production run. In drawing, where production is limited, either the inoculated grade or the nickel alloy cast iron compositions are suitable. Where the drawing operation is not too severe and where dimensional tolerances are rather broad, cast iron dies are becoming popular. This seems to be the result of the possibilities in heat treatment to hardnesses between 45 to 55 RC. In blanking, perforating, punching and shearing, quality grades of high carbon steels are used on short production runs, whereas for circular slitting cutters alloy steels containing approximately 1.0 to 2.0 pct tungsten, 1.0 to 1.3 pct carbon, and a small amount of chromium, vanadium or both are acceptable.

In any of these applications, a higher quality steel composition is usually selected for medium to long runs. In deep drawing, the tool steel selection may be the air hardening, high carbon-high chromium compositions, or one of the many of high speed steels, nitrided steels, or carbides. Nitrided steels have been successfully used, but there must be careful consideration of core hardness in conjunction with case hardness. The high pressures of drawing operation may cause case failure if the core strength is too low.

Carbide dies are limited to high production schedules and care must be exercised in handling them as they are relatively fragile. In operations involving blanking, perforating, and punching, the high carbon-high chromium compositions are the more widely accepted. In heavy duty shear blade applications, the tungsten chisel steels seem satisfactory. The high speed compositions, either the high tungsten (18-4-1) of the molybdenum types, are widely used for the circular slitting cutters.

The evaluation of one analysis over another for any specific job must be on the basis of past performances taking into account the design of the part, the type and efficiency of heat treat equipment, the skill of the toolmaker, and other factors that are variable from plant to plant. Regardless of the tool steel used, high finish of the completed tool is important, this being particularly true in deep drawing tools. In some instances, chromium plating reduces tool wear.

The cast aluminum bronzes are becoming increasingly popular for deep drawing, but they are apt to wear rapidly in comparison to the alloyed tool steel compositions. Aluminum bronzes are favored where the finished drawn item is to be highly polished. Ejection tools in deep drawing also favor the use of this material because the only portion of the tool material to wear is the die radius. On push-through deep drawing, wear will be more uniform, resulting in an increase of diameter of the cylindrical shell. The use of zinc base alloys in experimental determinations of draw sequences, stretch forming, and rubber forming precludes short life, but they serve a purpose where die expense is critical.

Both wood and masonite have limited application, the former in spinning and the latter in stretch forming. Rubber is also used as die material but has short life and dimensional difficulties in the finished part may be experienced. Hydraulic forming with oil or water is tricky, but has been successful in bulging operations under close dimensional tolerances.

Brass and bronze spinning tools are widely used, but there has been some thought on possible zinc deposition that may prove as harmful as grease or dirt in producing sensitization through heat treatment. If any doubt exists on this factor, experimentation with a flash pickle prior to annealing will either prove or disprove this claim. The author is uncertain as to whether zinc deposition during spinning occurs to such an extent as to cause harmful results. In one particular instance, a flash pickle prior annealing had all the appearances of improvement of production yield. Cast iron and steel spinning tools are used, but the author has yet to find suitable steel compositions that will overcome welding of the tool to the work.

The most commonly used equipment employed in cold forming stainless steels are the various modifications of presses. In operations involving shock, such as experienced in blanking or punching, the mechanical press is preferred, because of its ability to withstand the break through shock characteristic of these operations. If the hydraulic press were employed, these same operations prove quite destructive, resulting in greater protective maintenance. The open backed inclinable, permanent inclined, C or open throat vertical cap type, and the narrow, single point suspension, straight side type of frame are used for blanking relatively small pieces. For larger work, the C frame or open throat vertical and the permanently inclined press are used, the number of suspensions (either two or four) increasing in accordance with the size and design of the job. This type of press usually has an overhanging bed, i.e., a bed that is wider than the distance between the housings. When punching or blanking in the center of a large sheet or when feeding strip stock, the gap makes it possible to effect manufacturing economies. In the permanently inclined press, the incline being seldom more than 23°, the blanked parts may fall from the die into a tote box at the back of the press. This time saving feature along with the fact that the degree of incline usually does not complicate die setting, increases the popularity of this press where it can be used.

Drawing and forming operations can also be performed on mechanical blanking presses provided they are equipped with cushions. However, as these presses are limited to the extent of reduction, in most instances the hydraulic press is preferred. There are several factors that preclude the use of a hydraulic press: (1) Considerable more power is available than in a mechanical press of similar size; (2) the drawing speeds are slower, favoring greater reductions per draw; and, (3) the hydraulic press is more readily adjustable for thickness variations. On the deficit side, hydraulic presses can develop serious oil leakage, they are more difficult to maintain than mechanical presses, multiple die setups are not advisable, and initial cost is higher.

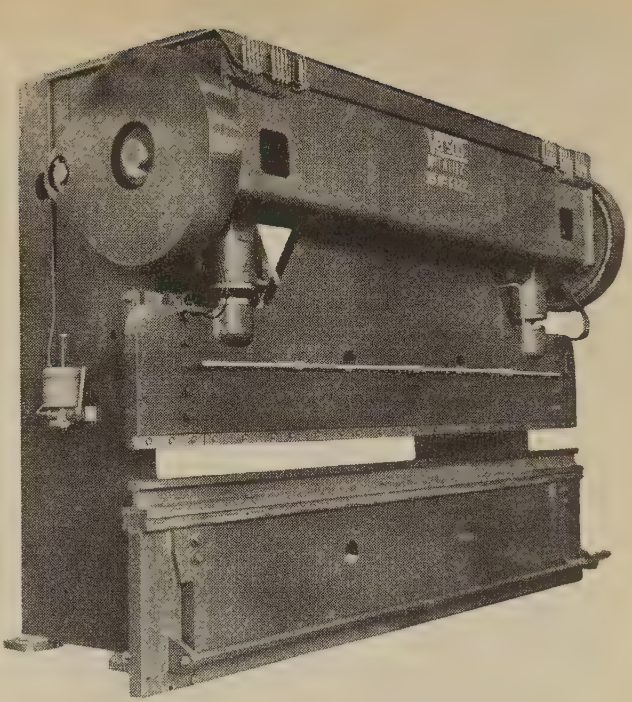

FIG. 15—The power brake, an extremely versatile forming tool, can be used for angle forming, flanging, hemming, flattening, beading, curling, and many other forming applications.

Other equipment used in fabricating stainless includes the spinning lathe, gang slitters, drawbenches, roll forming machinery, power brakes, power benders and stretch formers, all of which can be classified as special machinery. A spinning lathe, a gang slitter, and a typical power brake are shown in Figs. 13, 14 and 15. Both the drawbench and roll forming machinery are specialized where high production of straight formed sections is needed. Both are high production units, with the latter being preferred. Stretch forming, power forming and brake forming are used in both straight and contour forming, but the power brake is preferred because of its versatility. Gang slitters are used to shear sheet into strips and for trimming. They are frequently used in high production plants that require odd sized strip. Their use achieves minimum stock losses without incurring the extra expense and possible shipment delays caused by ordering odd sized strip from the mill.

The spinning lathe is used for bulging, necking, beading and flanging sections that have been previously drawn. As with all types of equipment used in fabricating stainless, sufficient power requirements are necessary because of the cold work tendencies of these compositions. Insufficient power in equipment often has proved disastrous and has discouraged wider use of stainless.

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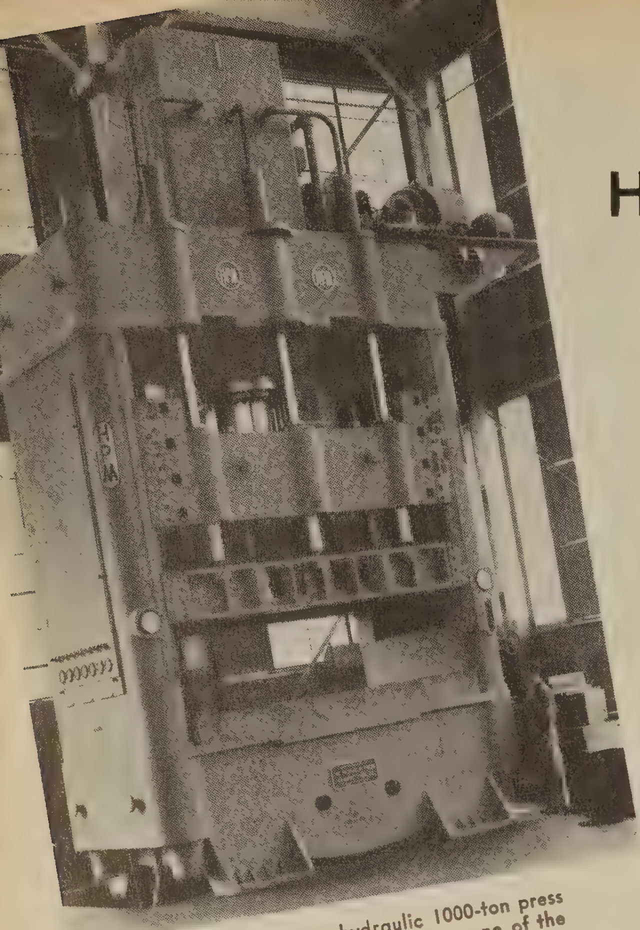


• • Double action hydraulic 1000-ton press with 144x84 in. pressing surfaces, one of the largest units ever built for export.

Hydraulic Standards Seen

Elimination of delay, confusion and expense resulting from attempts to follow special instructions from individual hydraulic equipment makers, as well as possibly substantial reductions in production costs are among the advantages seen in the adoption of the new hydraulic standards for industrial equipment. The author describes the background of this achievement and tells how this significant step was accomplished.

By R. R. MITCHELL
Production Engineering Section,
General Motors Corp.,
Detroit

SOME time ago, the General Motors Corp. found need to extend its program of standardization to include hydraulic equipment. The complete lack of standard specifications for hydraulic equipment by any organization made the need for such a program more acute. In the case of electrical standards, there was already in existence the ASA War Standards, C74.1942 covering machine tool electrical standards. This work had been carried on over a period of years by the Committee on Electrical Problems of the National Machine Tool Builders' Assn. It was after the pattern set by these standards that GM began to fashion hydraulic standards.

The relative inaccessibility of hydraulic equipment on machine tools and other industrial equipment was observed by the several General Motors divisions. Inaccessibility was contributing both to high maintenance costs and actual loss of production, it was believed.

The first General Motors group assigned to study the problem was made up of Divisional Plant Engineers, who were appointed to a subcommittee on hydraulics. At the first meeting held in the spring of 1947, this group merely exchanged information on the maintenance of hydraulic equipment in the various plants.

Points covered in this discussion included the inaccessibility of pumps, valves, piping, etc., of many machines. This condition alone resulted in excessive maintenance costs. Unreasonably long periods of downtime were being required even when only minor repairs were necessary. In many instances, breakdowns caused the loss of hydraulic fluid—not only costly but also presenting a problem of safety to personnel. At that time, design of hydraulic circuits, pumps, valves, reservoirs, piping and other equipment was at the discretion of the hydraulic equipment manufacturer, as was the installation of such equipment.

After several meetings, the subcommittee concluded that greater advantage should be taken of the skill and experience of the master mechanics of the GM manufacturing divisions. This group is responsible for machine tools, equipment and processes, and for the productivity of this equipment in all General Motors' plants. As a result, a subcommittee of the Master Mechanics' Committee was appointed to cooperate directly with the Plant Engineers subcommittee in writing the new standards, and the recommendations that were formulated represented the combined experiences of both groups.

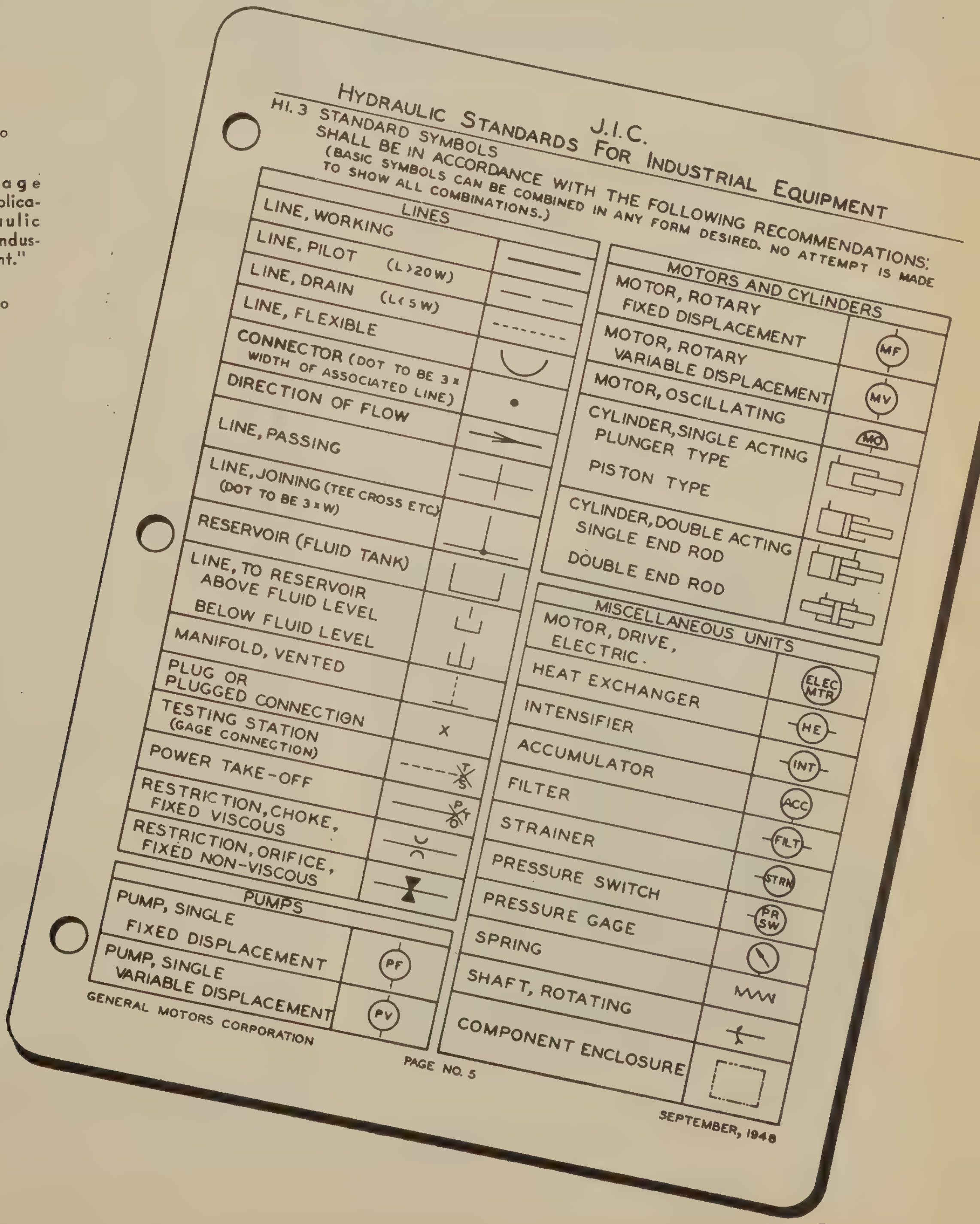
Because the problems involved were not only those of General Motors Corp., but were industry-wide, the cooperation of other large industrial concerns was solicited to discuss possible solutions on an industry basis. The intensely competitive situation that exists in the automobile industry does not prohibit limited cooperation where mutual operating problems are involved. On numerous occasions when problems are com-

Benefiting Metalworking Industry . . .

mon to the automotive industry, these problems are discussed in open meetings called Joint Industry Conferences. Tentative hydraulic standards for industrial equipment were developed from a series of such conferences.

After tentative standards had been developed and agreed upon by these Joint Industry Conferences, representatives from a number of hydraulic equipment manufacturers were invited to discuss the provisions included. Problems concerning the user were discussed with these representatives, especially problems presented to the user by the lack of acceptable hydraulic standards. Subsequently, the manufacturers reached agreement on the program and pledged their cooperation toward the further development of mutually satisfactory standards.

Later, specialized Joint Industry Conferences were held with representatives of various manufacturers associations, including the National



J.I.C.

HYDRAULIC STANDARDS FOR INDUSTRIAL EQUIPMENT

HI. 3 STANDARD SYMBOLS
SHALL BE IN ACCORDANCE WITH THE FOLLOWING RECOMMENDATIONS:
(BASIC SYMBOLS CAN BE COMBINED IN ANY FORM DESIRED. NO ATTEMPT IS MADE TO SHOW ALL COMBINATIONS.)

LINES	
LINE, WORKING	———
LINE, PILOT (L>20W)	— —
LINE, DRAIN (L<5W)	- - - - - - -
LINE, FLEXIBLE	
CONNECTOR (DOT TO BE 3 x WIDTH OF ASSOCIATED LINE)	•
DIRECTION OF FLOW	→
LINE, PASSING	
LINE, JOINING (TEE CROSS ETC) (DOT TO BE 3 x W)	
RESERVOIR (FLUID TANK)	
LINE, TO RESERVOIR ABOVE FLUID LEVEL	
BELOW FLUID LEVEL	
MANIFOLD, VENTED	
PLUG OR PLUGGED CONNECTION	x
TESTING STATION (GAGE CONNECTION)	
POWER TAKE-OFF	
RESTRICTION, CHOKE, FIXED VISCOUS	
RESTRICTION, ORIFICE, FIXED NON-VISCOUS	

PUMPS	
PUMP, SINGLE FIXED DISPLACEMENT	PF
PUMP, SINGLE VARIABLE DISPLACEMENT	PV

MOTORS AND CYLINDERS	
MOTOR, ROTARY FIXED DISPLACEMENT	MF
MOTOR, ROTARY VARIABLE DISPLACEMENT	MV
MOTOR, OSCILLATING	MO
CYLINDER, SINGLE ACTING PLUNGER TYPE	
PISTON TYPE	
CYLINDER, DOUBLE ACTING SINGLE END ROD	
DOUBLE END ROD	

MISCELLANEOUS UNITS	
MOTOR, DRIVE, ELECTRIC.	ELEC MTR
HEAT EXCHANGER	HE
INTENSIFIER	INT
ACCUMULATOR	ACC
FILTER	FILT
STRAINER	STRN
PRESSURE SWITCH	PR SW
PRESSURE GAGE	
SPRING	
SHAFT, ROTATING	
COMPONENT ENCLOSURE	

GENERAL MOTORS CORPORATION

PAGE NO. 5

SEPTEMBER, 1948

TYPICAL page from the publication "Hydraulic Standards for Industrial Equipment."

Machine Tool Builders' Assn., Hydraulic Press Mfrs. Assn. and the Resistance Welder Mfrs. Assn. Each group is supporting the proposed standardization program.

The cooperation between representatives of the manufacturers' groups and the users of hydraulic equipment has been constructive. A better understanding of the problem of each is something that cannot fail to result in beneficial changes in the design of future equipment. This plant is emphasized in the initial paragraph of the Hydraulic Standards for Industrial Equipment: "The purpose of these standards is to provide detailed specifications for the application of hydraulic equipment wherever used in industry, which will promote safety of personnel, uninterrupted production, long life of machine, equipment or tool and will not limit or inhibit advancement in the art of hydraulics."

After 14 Joint Industry Conferences held between February, 1947, and June, 1948, agreement was reached as to design and installation of many types of hydraulic equipment. These specifications, as approved at the joint meetings, were correlated, together with standard symbols and a glossary of terms. These were made available to all firms and associations participating in the development of the standards so that they could be studied before final adoption.

It will be necessary to review from time to time the standards as set up. These reviews should prove beneficial since, in addition to improving the standards, they will afford another opportunity for the hydraulic equipment manufacturer and the industrial equipment builder to better acquaint themselves with their customers' needs. The worth of the new standards will be determined in the final analysis by the extent to which the specifications are actually adopted and used. However, judging from the interest evidenced thus far by producers of automobiles and their hundreds of suppliers, broad acceptance is practically a foregone conclusion.

It is realized that delays anywhere along the production line may add substantially to the production cost of a truck or an automobile. With the increased use of hydraulic equipment, the importance of hydraulic standards both to the user and the manufacturer can hardly be overemphasized. Experience with the electrical standards have been conclusive enough to indicate that the adoption of standards for hydraulic equipment will make it possible for the industrial equipment manufacturers to substantially reduce production costs. Standardization is also expected to eliminate the delay, expense and confusion resulting from attempts to follow special instructions from each manufacturer of hydraulic equipment.

Thus, another milestone in the standardization of industrial equipment by the automotive industry has been reached. The hydraulics standards as adopted are now available in published form, and, considering the scope of the standards, remarkable progress has been made in a relatively short time.

Welding 4 to 6 pct Chrome Pipe

DEVELOPMENT of a procedure for welding 4 to 6 pct chrome pipe using General Electric welding equipment was announced recently by Houston Pipe & Steel, Inc., Houston. The process was devised by the company for use in the welding of chrome pipe being fabricated for installation in a large Texas oil refinery.

In the process a large preheating tip with oxyacetylene is used to bring the temperature of the joint up to 600° to 800°F and keep it there while the welding is done using chrome electrode type W-1502, ASTM-AWS specification E-502. After this, the temperature is raised to 1200° to 1350°F and the joint wrapped with asbestos tape to a minimum thickness of 1 in. and cooled to room temperature. This is shown in the accompanying illustration.

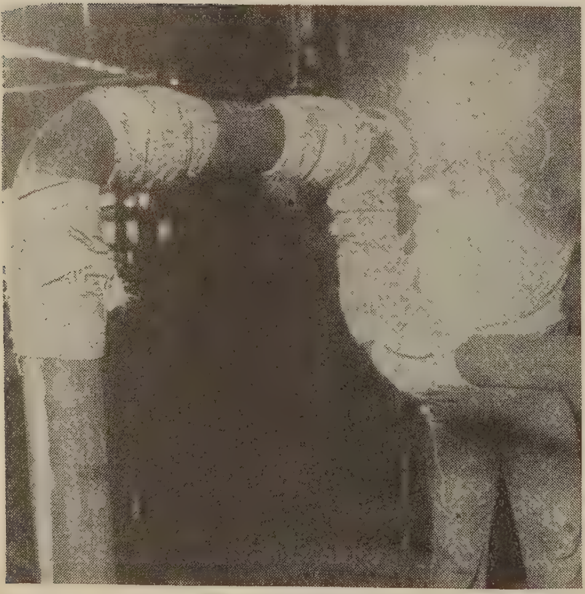


FIG 1—After preheating and welding, the weld areas are heated to 1200 to 1350°F and wrapped with asbestos to a thickness of about 1 in. and cooled to room temperatures.

Laboratory tests by the Shilstone Testing Laboratory, Houston, showed an ultimate tensile strength of 73,200 psi, and a satisfactory rating on a 180° root bend. Brinell hardness in the weld was indicated as 248, while Brinell hardness in the pipe was 174. A Charpy Notch-Impact value of 49.0 ft-lb was obtained in the weld metal at 70°. Chemical analysis of the weld metal showed 7.73 pct chrome and 4.53 pct chrome in the pipe. Where greater ductility and elongation was required, a furnace anneal at 1600°F was given after the pipe had cooled. This resulted in an average elongation of 40 pct in 2 in.

Safety in Power Press Operations

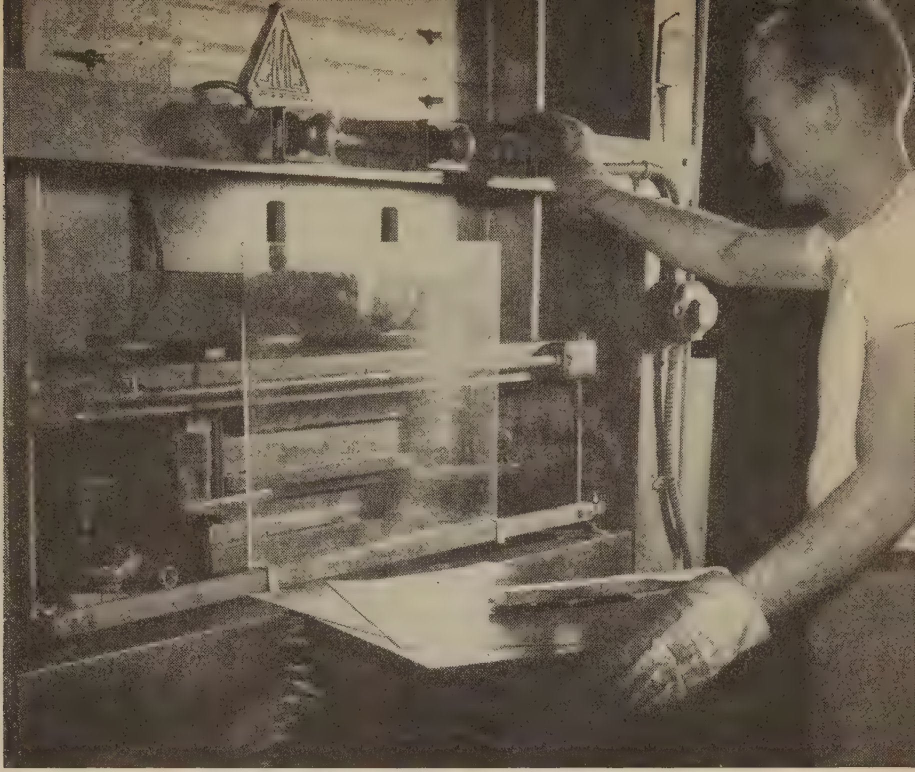


FIG. 1—This press guard developed by Westinghouse engineers insures against operators getting their hands between dies and at the same time permits a clear view of the operation.

THE problem of safety to personnel in power press operations is perhaps one of the most difficult problems in the entire field of industrial safety. Each press and every operation presents a separate and distinct problem because of the variations in size and design of presses, characteristics of materials used, and the wide range of objects produced. This makes it necessary to use a great variety of machines and dies.

Westinghouse Electric Corp., through its safety supervision, has made a careful study of press operations with respect to the safety of the individual working at and around the equipment. There are many factors that are important to the general problem, including equipment maintenance, guards and safe methods of feeding and ejection, inspection and supervision, instruction of operating personnel, lighting, material handling, and general housekeeping.

One recent Westinghouse development was a new type gate guard, shown in the accompanying illustration, for presses using air clutches and which are electrically controlled in operation. In other words, it can be used only where the operator must use an electric switch to engage a solenoid to start a press cycle.

The principle is to have a stop switch mounted in the danger zone of operations so that when anything touches this stop switch will close and break the operating circuit, throwing the stop circuit into use.

To accomplish this it is necessary to have a bar or barrier across the press opening (both front and back where operated from both sides) connected with the stop buttons, and to have this barrier so positioned that the least movement of it will immediately stop the ram from traveling.

This was accomplished by mounting two special outlet boxes on the face of the slide and in them were positioned normally closed micro-switches. These are mounted on plates that can be adjusted to give the switches the least amount of travel possible. Bearings were placed at the top and bottom of the special boxes and were drilled and reamed for a rod to pass through. This rod is concave milled where it passes the switches and the clearance between this milled part of the rod and the plunger end of the switch is very close.

The bottom end of this rod is drilled and threaded to receive additional round rods which are made up in 4 in. and 2 in. sections so that any adjustment for the shut height and travel of a press can be made. The last rod section is bent at right angles to attach the cross bar. The cross bar is of straight grained wood approximately ½ x 2 in. and of the correct length to reach across the open side of a press. It is attached to the rods with a more or less swivel or roller arrangement to allow it to float instead of being rigid.

The switches are easy to install, being wired in series with the stop circuit on the press using a flexible cable. The flexible cable is a safety feature, because if the cable breaks or grounds the press will not operate.

If anything gets under the bar and raises it more than ¼ in., it will open the micro-switches in the boxes and break the circuit to the solenoid, causing the ram to stop.

In the normal speed presses the slide stops within 2 to 2½ in. travel after the solenoid has been closed. The slide travels this distance between the time the clutch is released and the brake brings it to a stop.

The safety bar is adjusted to hang 2 in. below the bottom of the top half of the die. This prevents the operator from working under the safety, because he must be below the opening in the die; and, if he should press the operating button while under the safety, the slide would only travel a few inches before the bar would hit his arm and stop the press.

To keep drawing compounds and oils from splashing the operator, a piece of acetate glass is clamped on the bar either the entire length or for a partial length.

The only caution that must be exercised is that the die setter must disconnect support rods when a die is installed or removed from the press. Removal of the rods takes but a moment.

There is probably no other tool used in the metal trade industry that is as badly neglected as the punch press. Makeshift repairs are prevalent and the presses are frequently run until they literally fall apart. Many serious accidents result directly from faulty brakes. A power press brake must bring the shaft to a dead stop many thousands of times a day, yet brakes are found so badly worn and oil soaked that they fail to function. Stop and clutch pins are often so badly worn as to jeopardize the safe operation of the press. Broken springs and worn latching knives and cams are common in every shop. Proper lubrication is essential to safe operation, and yet this is very often neglected or done haphazardly.

There are two general types of operations, primary or blanking operations and secondary or forming operations. On high volume blanking operations, automatic feeds should be used where possible, in which case, the point of operation can be completely closed and guarded. Air or mechanical ejection often can be used with this type of setup. Where automatic feeding is not practical and material must be fed manually, suitable projection should be provided to keep the operator's hands out of danger.

Scrap cutters incorporated in the tool will facilitate handling and removal of scrap and reduce hazards. In some instances, adjustable stationary barriers attached to the press frame can be used. Where possible, safety features should be designed as an integral part of the die.

Secondary or forming operations are often more difficult to guard; but where the volume is sufficient and the nature of the parts permit, automatic or semiautomatic feeding methods can be used, and effective ejection methods should be a part of design. The possibility of gravity nesting or slide or dial feeding should be given serious study.

Time spent by the operator in placing or removing work from a die is wasted time and increased exposure to injury. The interlocking gate guard can be used to advantage more frequently than it is, and two-hand controls are important in guarding presses.

Operating personnel must be instructed carefully on how to perform a job. Each step should be explained and demonstrated in detail. Care should be taken to see that the operator understands fully all possible hazards connected with the job. Many new operators have suffered serious and painful injuries shortly after they have been on a job because they didn't realize the danger. A few minutes instruction on how to do the job is an important part of any safety program.

Good lighting is an absolute necessity around the power press. Careful study could be given to augmenting available light by proper use of contrasting paints, using a light color in the throat of the press.

Material handling is important in efficient operation of presses from the standpoints of safety and production. Substantially built stools, suitable conveyors, hoppers or pans, trays for finished parts, bins for scrap material are things that tend toward the comfort of the operator and facilitate the movement of the material.

Good housekeeping is often neglected. Proper storage of dies and tools is important. Any factors that contribute to general disorder and confusion should be eliminated.

Sonic Agglomeration of Smoke and Dust

SOUND waves with frequencies of 5000 to 50,000 vibrations per sec have proved effective in removing pollutants from the air and utilization of the effect on an industrial scale is practical, according to Dr. H. W. St. Clair, U. S. Bureau of Mines Eastern Experiment Station, College Park, Md.

Intense sound, capable of floating lead shot in the air, causes tiny dust and smoke particles to assemble in thin, cohesive wafers which will settle out of the atmosphere. The wafers form at intervals equal to ½ the wave length of the sound. Time for agglomeration varies from a few seconds up to 10 or 15 sec, depending upon the size and concentration of the particles.

Speaking at the recent national meeting of the American Chemical Society in San Francisco, Dr. St. Clair attributed sonic agglomeration to a complex array of forces. One theory explains the effect in terms of the increased rate of collisions between particles resulting from the frenzied movement of the particles which is produced. Other forces similar to the phenomena which explain the curve of a baseball are also involved.

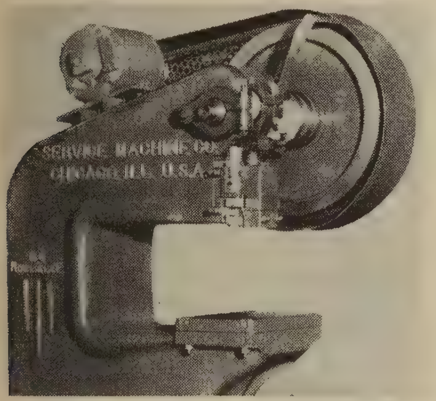
The most effective frequency is the upper audible range, approaching 18,000 vibrations per sec. Sound of this general frequency can be attentuated so as not to cause objectionable noise, and in many cases the frequency can be raised above the audible range.

Experiments using powerful sound generators to clear tubes filled with smoke of various types, fogs of oil and water, quartz dust and other common air pollutants have been carried out.

New Production Ideas . . .

Punch presses, profile and surface grinders, a precision bench shaper, a tube end finishing machine, grinding and milling machine attachments, a jolt pin lifter, arc welders, stainless steel electrodes, vibrating screens, a dust control unit, a light signal device, a ceramic surface plate, and several material handling units are featured in this issue.

LARGE, bulky jobs as well as regular punch press operations can be performed on a new 5-ton Rousselle deepthroat press. The press has a 12-in. throat and is available in bench and floor models. The frame is a heavily ribbed semi-steel casting, providing rigidity and strength. A large, heavy duty clutch can be set for single stroke or continuous operation, and the press operates at 250 strokes per min. The OG bench model, complete with motor, weighs approximately 550 lb. *Service Machine Co. For more information, check No. 1 on the attached postcard.*

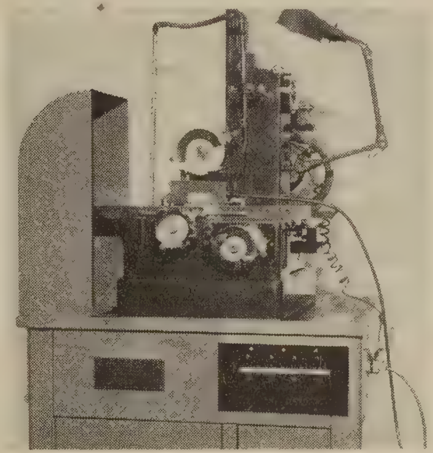


Profile Grinding Machine

DESIGNED for high-speed precision grinding of internal and external contours and for curved, odd and irregular surfaces, a bench type profile grinder can be adapted to the grinding of die clearances, sharpening cutter dies and punches, grinding cams and finishing hardened steel parts. A collet chuck permits easy removal and insertion of grinding wheels and provides true running of the wheels. A diamond wheel dresser is built-in. A compound tilting mechanism tilts the work table 30° to front and 15° to side permitting a wide range in grinding compound curves and angles. Vertical adjustment is 3¼ in. Two models for mounted stone and carbide wheels differ only in spindle speed. *Rice Pump & Machine Co. For more information, check No. 2 on the attached postcard.*

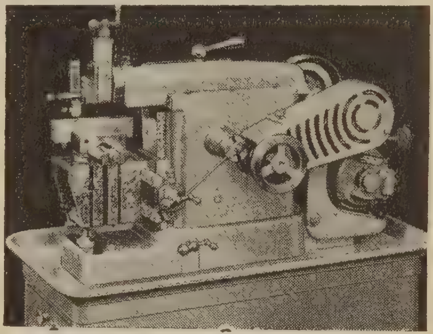
Surface Grinder

A NEW surface grinder designed for tool makers and small parts grinding is so sensitive that it is said to split 0.0001 in. yet can be used for heavy roughing. It has variable wheel speeds to give maximum flexibility, and grinds with wheel diameters from 1/16 to 5 in. or more. A coolant system permits the coolant to flow on the work from almost any angle. All parts exposed to wear, ways, gibs and lead screws, are hardened and ground high-carbon, high-chrome steel, and fully protected by dustproof and waterproof guards. *Jakobsen Tool Co. For more information, check No. 3 on the attached postcard.*



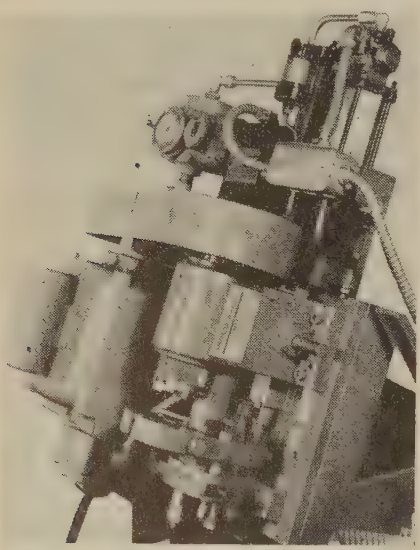
Precision Bench Shaper

A NEW 7-in. bench shaper for toolroom and industrial use has main castings of close-grained semi-steel. The ram and table slides are milled and hand-scraped for precision fit and are provided with adjustable gibs. All gears are machine-cut from steel or gear fiber for smooth, quiet operation. The ram is 18 in. long with 0 to 7 in. stroke adjustable by a handwheel. Cutting speed is variable from 3 to 114 fpm. Stroke rates of 42, 75, 120 and 195 per min are obtained by shifting a V belt on 4-step cone pulleys. The tool head has a 3-in. feed, swivels to any angle, and has a positive lock. The tool post takes tools with ⅜ x ⅞ in. shanks. The work table is 5 7/16 x 5 x 6 in. Horizontal table travel is 9½ in., vertical travel is 5 in., and maximum distance from table to ram is 5½ in. A 1/3 hp, 1725 rpm motor is required for power. *South Bend Lathe Works. For more information, check No. 4 on the attached postcard.*



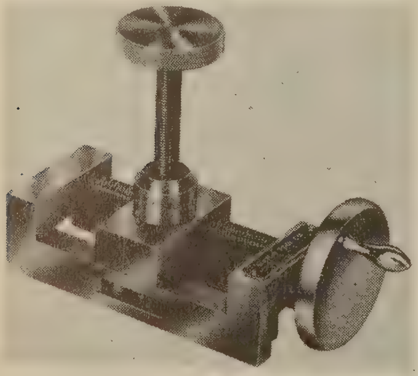
Tube End Finishing Machine

AUTOMATIC air operation is available for simplified, high-speed tube deburring and other end finishing operations on the Series 600 tube and rod end finishing machine. The small bench model uses a foot switch operated air cylinder with hydro-check control to leave the operator's hands free to handle work up to 2-in. diam at production speeds of 800 to 1200 tube ends an hour. Chuck and work-feed action is taken from direct pull of the air cylinder, which provides rapid forward and reverse travel of the work to the tool with an adjustable, hydro-check to control the feed speed and depth of cut. A work positioning stop and adjustable, positive, depth-of-cut stop combine to provide accurate operation. Eight spindle speeds are obtained from the step sheave V-belt drive. *Pines Engineering Co., Inc. For more information, check No. 5 on the attached postcard.*



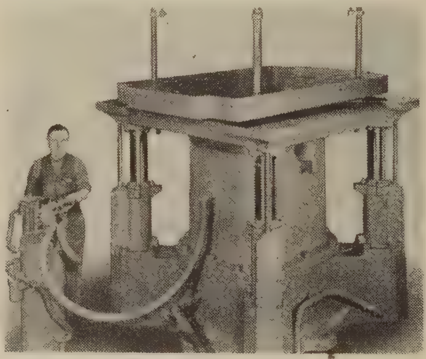
Wheel Dresser

A NEW Model A wheel dresser eliminates stopping the machine, removing work from the chuck and lowering and raising the wheel head in dressing wheels from 1⅜ to 4¼ in. wide. With this attachment, the operator can dress a wheel while grinding. It dresses parallel with the chuck. *Matco Tool Co. For more information, check No. 6 on the attached postcard.*



Jolt Pin Lifter

A HEAVY duty, jolt pin lifter weighing 11 tons has been designed to eliminate squaring shafts, linkages and cranks. Its rigid integral frame is actuated by four equally spaced pistons. A lift piston fitted into the base pushes upward against the solid one-piece lifting frame. Four hardened and ground pins level the strip frame at the start to guard against binding and hydraulic power on the lifting frame insures smooth performance. A slow draw valve is adjustable for speed and length of draw. The machine has a solid, true jolting action and a precise controlled pattern draw. The jolting capacity with an 18-in. jolt piston is 10,000 lb at 90 psi line pressure. An hydraulic strip has 7000 lb capacity. The table is 85 x 54 in., with a pin width of 51 in. max and 38 in. min. *Milwaukee Foundry Equipment Co. For more information, check No. 7 on the attached postcard.*

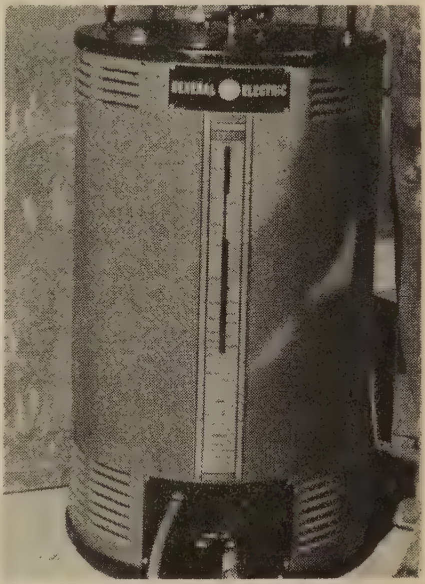


Stainless Steel Electrode

THE new 316-CF stainless steel electrode has been developed to weld type 316 ELC stainless steel. With the low amount of carbon—0.03 pct maximum—in the parent metal and electrodes, it is possible to practically eliminate intergranular corrosion in the zone adjacent to the weld and in the weld deposit because carbide precipitation is prevented. Physical properties as welded are: Tensile strength, 85,000 to 95,000 psi; elongation in 2 in., 40 to 50 pct. *Champion Rivet Co. For more information, check No. 8 on the attached postcard.*

Arc Welders

INCREASED welding range and stepless precision current control feature a new line of ac arc welders, available in 200, 300, 400 and 500 amp models for indoor manual welding; 750 and 1000 amp models for machine and submerged melt welding; and a special 200 amp model for light-duty, job-shop welding. Dual current ranges and increased adjustment overtravel provide extra low current range with high maximum short-time output. Stepless current control, operated by a bearing mounted current adjustment crank, enables the operator to make precision settings throughout the current range. An open-circuit voltage of 75 v provides good welding performance through added arc stability. Idlematic controls on the weather-resistant models of 300, 400, and 500 amp automatically reduce the open circuit voltage on the electrode to about 30 v but when the arc is struck the advantage of 75 v open circuit voltage is retained. The welders have steel housings. Updraft, fan-assisted ventilation provides cool operation. *General Electric Co. For more information, check No. 9 on the attachehd postcard.*



Electric Immersion Heaters

STAINLESS steel or Inconel Chromalox electric immersion heaters can be used for heating a wide range of industrial chemicals, alkaline cleaners, extra-heavy degreasing solutions, oils of high sulfur content, and many corrosive liquids that do not attack stainless steel or Inconel. These new heaters are hair-pin shaped heavy duty Chromalox tubular elements welded into a solid screw-plug with 2-in. standard pipe thread and a heavy 3-in. hex section. The heating elements are die-pressed to a patented triangular cross-section to obtain high mechanical strength and a more dense refractory. The heated length of the element ranges from

12 to 50 in. Ratings from 1 to 15 kw are available in voltages of 230, 460, and 550, single phase. *Edwin L. Wiegand Co. For more information, check No. 10 on the attached postcard.*

Dust Control Unit

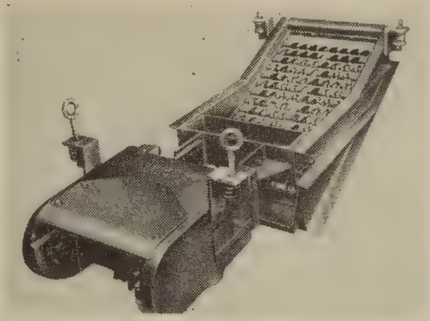
USED for the collection and control of dust generated in manufacturing and process operations, the type N Roto-Clone has been re-designed to permit wider application and improved performance. It is a hydrostatic precipitator that cleans the air by the combined action of centrifugal force and a thorough inter-mixing of water and dust-laden air, re-using the water without recirculation pumps or spray nozzles. The new Roto-Clone, with capacities through 48,000 cfm, maintains a lower pressure drop with the same cleaning efficiency and water recirculation rate and can be operated from 50 to 120 pct of its nominal rating without affecting its collecting efficiency. All sizes are available with either manual clean-out, sludge ejector, or hopper bottom arrangement. *American Air Filter Co. Inc. For more information, check No. 11 on the attached postcard.*

Punch Press Pitman

A NEW style punch press replacement pitman, adaptable to all punch press cranks, protects overload on 25 to 250-ton capacity presses during the work cycle. The pitmans are in stock and the throw bearing, including the ram connection, are machined to size and specifications for fitting individual presses. These hydraulic jacks not only protect the press bed crankshaft and the press bed frame from damage, but can be calibrated to assure maximum protection to fragile dies used in the press. *Dayton Rogers Mfg. Co. For more information, check No. 12 on the attached postcard.*

Vibrating Screens

VIBRATING screens for rough sizing are made with stepped, punched plates having tapered, elongated openings, the size depending upon material specifications. Single or multiple deck screen plates are available. The screen area is activated by the Vibra-Flow vibrating motor featuring variable control of material flow. This provides a two-purpose piece of equipment, a vibrating screen and a rheostat controlled vibratory feeder, which increase the efficiency and capacity of crushers and fine grinders and prevent damage to belt conveyers by allowing the fines to cushion the lumps. *Syntron Co. For more information, check No. 13 on the attached postcard.*

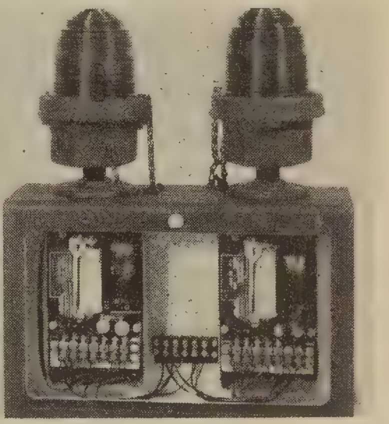


Grinding Attachment

FOR surface and 5-in. deep cavity grinding and polishing, a new, high-speed attachment for flexible shaft machines increases speed of the Nos. 2 and 4 Haskins machines to a ratio of 2:1. It offers a means for grinding and polishing welds in inaccessible places and permits use of small rubber and resinoid bond grinding wheels up to 2⅝ in. diam. The molded round belt is amply guarded and offers a convenient hand-hold for sensitive grinding with less pressure. *R. G. Haskins Co. For more information, check No. 14 on the attached postcard.*

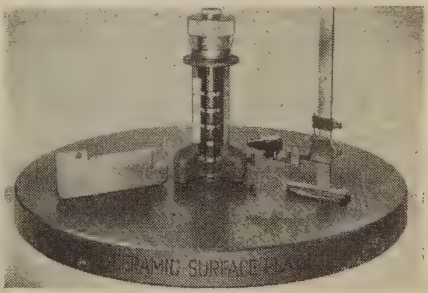
Light Signal Device

A NEW self-contained light signal device to be used with the P&W Model D electrolimit continuous gage signals the operator of a rolling mill continuous inspection line or a shear by means of lights when the strip material is off gage. It can also be used to control an external circuit for classifying. The device consists of one red and one green lantern, two electronic relays and a suitable mounting case. The limits are set on the contact meter and when these plus and minus limits are exceeded, an electric contact is made through the relays thus providing a control circuit that can be used in controlling mechanisms and lighting lights. *Pratt & Whitney, Div. Niles-Bement-Pond Co. For more information, check No. 15 on the attached postcard.*



Ceramic Surface Plate

A NEW ceramic surface plate has been designed for use in toolrooms and inspection departments where precision setups and checking measurements require the highest degree of accuracy. The plate affords three advantages: extreme wear-resistance, a precisely flat surface guaranteed to be within 0.0001 in., and a continuously smooth surface finish. Field trials conducted on this plate reveal an almost complete absence of wear either to the plate or to gages and instruments used on it. The plate will not warp or deform, expand or deflect upon load. Its smooth semi-glossy surface is neither slippery nor sticky and has been proven



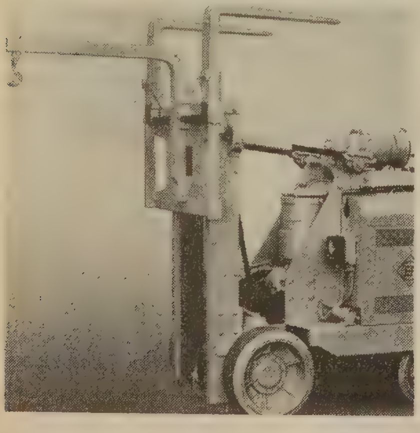
suitable for blueing. The plate is non-magnetic, will not sweat or corrode under any atmospheric condition, and may be cleaned with soap powder and water. *Norton Co. For more information, check No.* 16 *on the attached postcard.*

Oil Circulating Drill Head

A FIXED center oil circulating head for high speed drilling machines has 34 spindles in a 6-in. square head. It eliminates oil seals and other rubbing parts and is fully ball bearing equipped. Idler shafts are mounted on ball bearings at each end of the shaft. The head contains an oil pump with a built-in, trouble-free vane type pump that pumps the oil to the top of the head and by centrifugal force spreads it over its entire upper surface. It then cascades down over the bearings and gears. All spindles and shafts are made of alloy steel heat-treated and ground. The head is reported to have been operated successfully at 10,000 rpm with very little heat. *U. S. Drill Head Co. For more information, check No.* 17 *on the attached postcard.*

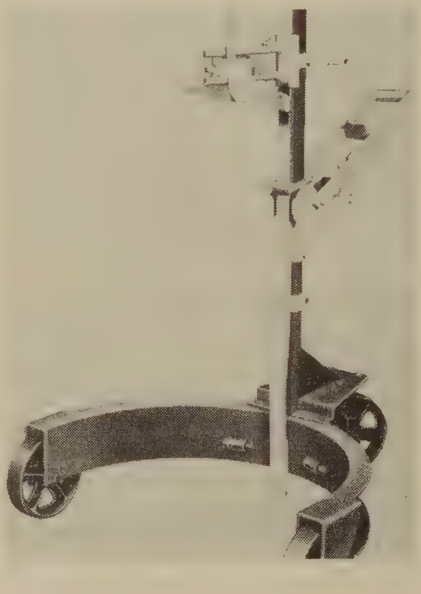
Fork and Boom Attachment

A FORK and boom attachment in one unit for industrial trucks has three main parts: A base member that is attached to the truck's lifting mechanism and rides in the upright tilting columns; the fork tines suspended from a bar supported on the base; and the boom. The boom is a solid, alloy steel heat-treated bar bent at right angles near the middle of its length. The part that engages the base slides into brackets and a base socket where it is held vertically and firmly in place. The boom may be detached when forks are to be used alone. The fork tines are swung upward and backward when the boom is required by itself. The boom illustrated extends 36 in. horizontally from the base. Fork tines are 36 in. long. The maximum height of the lift of the boom hook from the floor is 30 to 145 in. Maximum height of fork is 117 in. The truck's rated capacity is 4000 lb. *Elwell-Parker Electric Co. For more information, check No.* 18 *on the attached postcard.*



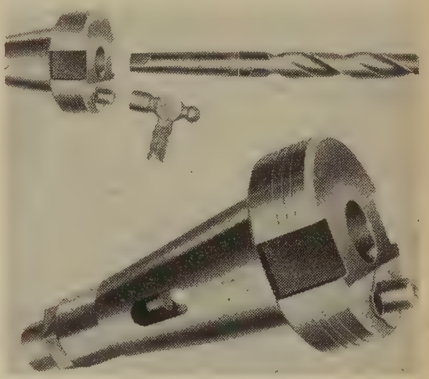
Drum Carrier

LIFTING, carrying and depositing 800 to 850-lb drums and barrels in 50 to 60-gal sizes without human hands touching them is possible with a three-wheel hand truck, the Drumobile. It picks up the container, carries it in a level, upright position and deposits it gently without tilting. Open containers may be carried without risk of spilling, even when brim full. The lever-handle after serving its function in lifting the load and actuating the safety lock, becomes a vertically free-swinging steering column adapting itself to any desired height. *Ernst Drumobile Div., Brantwood Products, Inc. For more information, check No.* 19 *on the attached postcard.*



Milling Machine Adapter

TOOL changes in milling machine operations can be accomplished in a matter of seconds with a new Harding rotary adapter. Tools are ejected by tapping the release button located on the face of the adapter. The ejection is effected by built-in hydraulic force. The adapter will fit any milling machine spindle and will hold any tool having a Morse taper shank. Standard holders are manufactured in both No. 40 and 50. *Greenville Tool & Die Co. For more information, check No.* 20 *on the attached postcard.*



Clamp Truck

FAST, convenient handling of such bulky items as oil drums, barrels, and wood boxes is possible with a new clamp truck that utilizes hydraulically operated clamp arms to grip the load for lifting and transporting. The clamp is all-welded steel with dual double-acting hydraulic cylinders and is mounted on the truck lift carriage. The control valve is mounted in the operator's compartment. Inward and outward movement of the clamp arms is regulated by a control lever.

The hydraulic system of the truck supplies oil under pressure to the clamp cylinders. Length of clamp is 36 in.; length of clamp arms 31 in.; width of arms, 12 in.; opening between arms, 18 to 66 in. Clamp arms are steel ribbed, either straight or slanted in 1 in. at outer end. *Baker-Raulang Co. For more information, check No. 21 on the attached postcard.*

Car Shaker

EMPTYING coal, cinders, ore, slag, coke, sand and gravel and other granular materials quickly and safely from drop-bottom gondola cars is facilitated with a new car shaker that fits all sizes of American gondola cars. It has an all-welded 11 x 5 x 4 ft 4 in. steel body that is lowered to rest on the car body flanges by a hoist or crane. Vibratory motion is transmitted to the car through an eccentric shaft mounted within the shaker body on heavy duty bearings. The unit is driven by a totally-enclosed motor located inside the shaker body for full protection. An enclosed Tex-rope drive with deep groove sheaves is used for power transmission. *Allis-Chalmers Mfg. Co. For more information, check No. 22 on the attached postcard.*

Welders' Protective Clothing

APRONS, arm sleeves, bibs and jackets are now available in a new material, Asbeston. It is a burnproof and heat resistant no lint fabric, developed to meet the need for a durable, washable and lightweight, protective garment that can be worn for hours without discomfort. This new fabric has been tested, approved and used by the U. S. Navy for fire fighter suits. Washing or dry-cleaning does not harm the fabric, nor reduce its flameproof qualities. *Lester L. Brossard Co. For more information, check No. 23 on the attached postcard.*

Flexible Gate Material

MOLD hardness sufficient to withstand the ramming of the sand is claimed for a material, Flexi-Gate, designed for gate and runner strips on pattern boards. It is made to the required size and can be applied to bottom or pattern board in any desired curve by nailing in place. It is available in half-round sizes of 1½, 1¾, 2 and 2¼ in. *Key Co. For more information, check No. 24 on the attached postcard.*

Fire Retardant Paint

A NEW fire retardant paint is made from an oil base, and is available, ready mixed for immediate use by brush or spray. The paint dries to a hard, lasting finish, and is washable. It can be applied to any surface and one coat will cover in most cases. The paint comes in outside, interior gloss and interior flat. Its fire retardant qualities are said to improve with age. *F.R.P. Corp. For more information, check No. 25 of the attached postcard.*

Smoke Density Indicator

A NEW smoke density indicator and control indicates industrial smoke density and thus facilitates compliance with smoke abatement ordinances. The equipment can also control over-the-fire heated air to the fire-box to reduce excessive smoke and improve fuel and boiler efficiency. The equipment consists of a light source, a phototube holder, and an enclosure containing the required control and incorporating an indicator calibrated in Ringlemann units, in one packaged unit. A recorder can be furnished. An alarm gives warning when smoke density rises above a predetermined level. *General Electric Co. For more information, check No. 26 on the attached postcard.*

Flexible Synthetic Coating

DEVELOPMENT of a speed-bake synthetic that adheres tenaciously to highly polished brass, stainless steel, aluminum and other surfaces that ordinarily resist adhesion of organic coatings has been announced. The synthetic can be applied to a degreased surface without the necessity of chemical surface treatments. On most thin gage metals baking is at 275°F for 15 min. For brass and for thick gages of other metals longer baking at slightly higher temperatures is recommended. Besides the adhesion value of this flexible synthetic, a hard, smooth and uniform surface is achieved, having high resistance to chemicals and solvents, and to abrasion. It is produced in all colors and prepared specifically for spray application. Variations permit dipping and roller coating methods. *Metric Lacquer Mfg. Co. For more information, check No. 27 on the attached postcard.*

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REFRACTORY MATERIALS for cupolas and ladles, including stone, brick, grit and cement, are discussed in folder. Experience indicating that the cost of keeping cupola lining in good condition, using these materials, varies from 1½ to 3¢ per ton of metal poured is cited. *Somerton Quarries. For more information, check No. 28 on the postcard.*

DRESSER GUIDE CHART gives information on grinding wheels and dresser types to be used for a variety of grinding jobs. Grinding wheel diameters and face dimensions, and other information is given relative to rough, smooth, precision, high speed and other jobs. *Desmond-Stephan Mfg. Co. For more information, check No. 29 on the postcard.*

PIPE FITTINGS catalogs devoted to seamless welding fittings, forged steel fittings and forged steel flanges are available. Technical data sections are included. A seamless reducing elbow and a full-branch taper-designed seamless welding tee are among special items covered. *Ladish Co. For more information, check No. 30 on the postcard.*

STEEL PICKLING operations, making use of a detergent added to the bath which is said to allow pickling at high ferrous sulfate concentrations, and to reduce pickling time, extend bath life, eliminate fumes and reduce tank maintenance, are described in brochure. *Solvay Sales Div., Allied Chemical & Dye Corp. For more information, check No. 31 on the postcard.*

GAS COMBUSTION SYSTEMS used for continuous fusion in electrolytic tinning lines, in speeding seamless tubing production and in annealing stainless bars and tubes are discussed in reprints of technical articles. *Selas Corp. of America. For more information, check No. 32 on the postcard.*

OVERHEAD MATERIALS HANDLING equipment, both hand operated and electrified, is described in booklet 2008. Engineering and application data are included to assist in the selection of proper equipment. Cost graph for determining hoisting expenses is included. *Cleveland Tramrail Div., Cleveland Crane & Engineering Co. For more information, check No. 33 on the postcard.*

INFRARED SYSTEMS for drying finishes are illustrated in folder. Economical operating costs, fast drying, reduced floor space, low equipment costs and rigid control of finish quality are among the advantages stressed. *Fostoria Pressed Steel Corp. For more information, check No. 34 on the postcard.*

PLASTIC COATED GLOVES which give added wear and which resist oil, grease, acids, solvents and caustics are discussed in bulletin. Two synthetic materials and a natural rubber are the coatings used. Performance of each type coating in a variety of jobs is tabulated. *Edmont Mfg. Co. For more information, check No. 35 on the postcard.*

SAND RIDDLING MACHINE that oscillates 900 times per min and riddles enough sand to cover an ordinary pattern plate in 3 sec is discussed in booklet. The unit has sealed bearings throughout and will take screen meshes of any size. *Roller Riddle Corp. For more information, check No. 36 on the postcard.*

AIR CONTROL VALVE developed for single or double-acting air cylinders, air-operated presses and similar equipment is discussed in bulletin 230. Valve is a solenoid-controlled, pilot-operated reciprocating disk type which is air tight and self-lapping. *Hannifin Corp. For more information, check No. 37 on the postcard.*

FORCED-AIR SPACE HEATERS, available in standard output capacities from 400,000 to 2 million Btu's per hr, are described in bulletin 523. Heaters are direct fired either by oil or gas and can be supplied with combination burners for quick conversion from one fuel to the other. *Dravo Corp. For more information, check No. 38 on the postcard.*

UNIFIED SCREW THREAD system is reviewed in bulletin. The material is essentially a digest of the proposed American Standards Assn. publication "Unified and American Screw Threads." Tolerances, allowances and crest clearances for the various thread classes are included. *Eastern Machine Screw Corp. For more information, check No. 39 on the postcard.*

CONVEYING EQUIPMENT catalog describes developments and applications of conveyers in steel, brass and aluminum mills. Systems for handling coils, sheets, plates, and other standard forms are covered in the 50-page book. Layouts of plant divisions are included and information on tilters, bumpers and other installations is given. *Logan Co. For more information, check No. 40 on the postcard.*

LIFT TRUCKS in capacities from 1000 to 15,000 lb are discussed in 28-page bulletin 4883. Features are a rear axle construction which provides an oilless bearing the entire width of the truck, spring handle hold-up and positive engagement of handle latch and lifting lever. *Barrett-Cravens Co. For more information, check No. 41 on the postcard.*

FRICTION CLUTCH AND BRAKE, of the drum type, and a variety of power presses are discussed in booklet. Friction clutches stress light weight advantages and involve fewer parts than conventional disk models. Gap, trimming, single and double crank, and other types of presses are illustrated. *Cleveland Punch & Shear Works Co. For more information, check No. 42 on the postcard.*

ADJUSTABLE-SPEED DRIVE for ac circuits is dealt with in bulletin 311. Unlimited range of speed changes is provided, with acceleration and deceleration controlled to assure smoothness and fast operation. Maintenance of proper tension on roll-fed materials is provided. *Reliance Electric & Engineering Co. For more information, check No. 43 on the postcard.*

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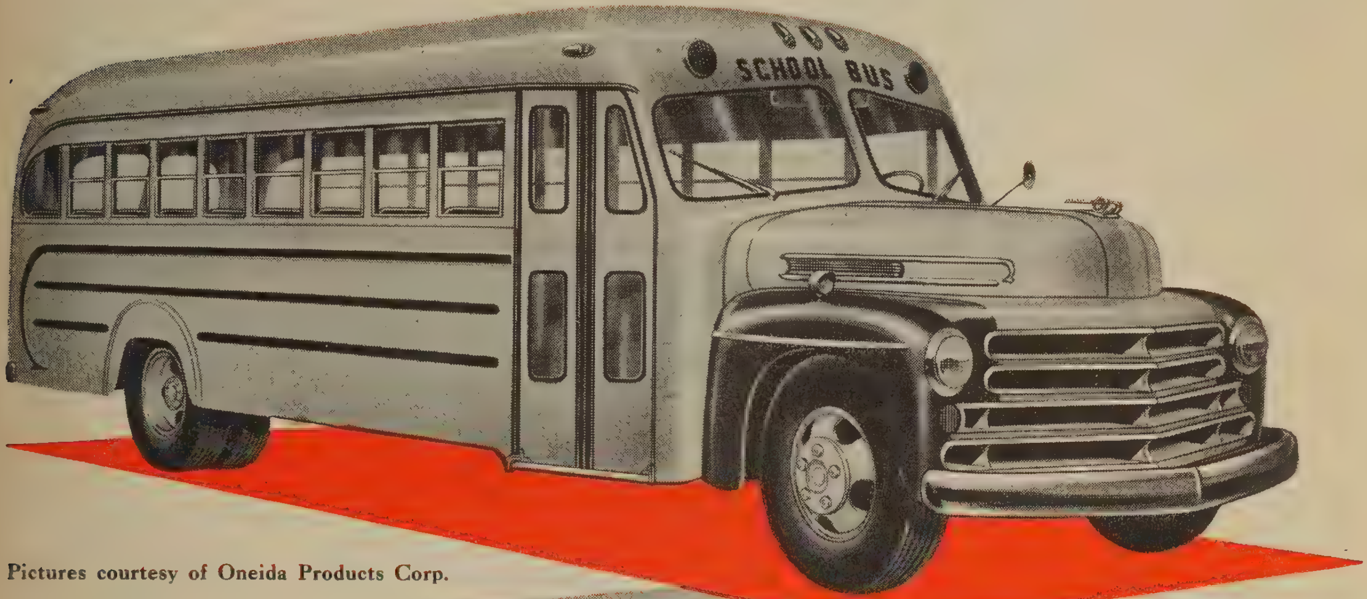
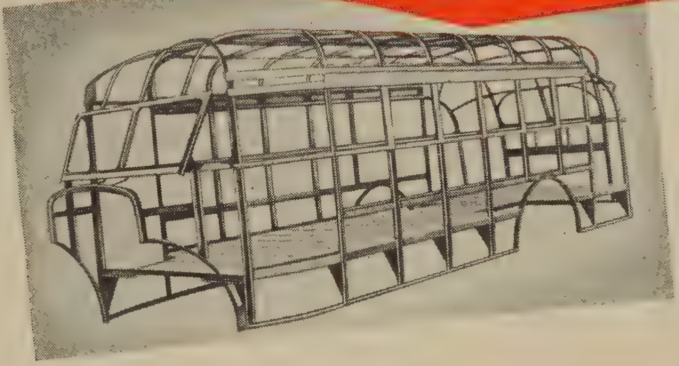


Pictures courtesy of Oneida Products Corp.



The greater strength and toughness of N-A-X HIGH-TENSILE steel permits weight savings of up to 25% in section—and still affords maximum protection against injuries from traffic accidents.

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WALTER G. PATTON

• Auto management and UAW-CIO prepare for coming negotiations . . . Union likely to stress "Double Standard" and ability to pay . . . New book details recent UAW-CIO history.

DETROIT — Labor has again taken the spotlight at Detroit. Quickie strikes, usually associated with disputes over production standards, have been a source of increasing aggravation to management at Midland, Hudson, Dodge and U. S. Rubber. Chrysler has been particularly hard hit by the Midland stoppage, losing an estimated 10,000 to 12,000 cars during the past several weeks.

Meanwhile, both auto management and auto labor are busily preparing evidence for use in the coming wage negotiations. This is particularly true at Ford, first on the union list. The company has already indicated "inability to pay" will be its defense against union demands for company paid $100-a-month pensions at age 60 (after 25 years' service) plus the payment of 5 pct of the Ford payroll to a health and security program.

In addition to its demands for pensions, the union is asking for "protection" of the pension rights of workers who die or are separated from the payroll before they are retired, administration by a board of trustees on which the workers are equally represented with the employer, and pension payments to everyone in the bargaining unit. As in the case of pensions, health insurance is to be paid for by the employer.

According to the union, "Corporate management has been talking out of both sides of its mouth for a long time on the security problems of its workers." Union spokesmen are saying that the very same people in management who say the worker's security problem ought to be handled in Washington are going to Washington and opposing any improvements in social legislation.

They contend the right to press bargaining demands for pensions and social security have been established in the Inland case and that while management is attempting to deprive workers of the rights to bargain for health and old age securities, it is paying generous pensions to its top executives. "It's the old double standard," the union is telling its members.

A recent union publication lists the alleged salary and bonus received and pension provisions made for top automotive corporation officials in 1947. Nine GM executives are listed showing provisions of annual pensions of $25,000 each. The corporation's alleged contribution to the pension fund ranges from $5,400 to $18,300, according to union sources.

ANNUAL pension provisions have been made, the union says, for five top Studebaker officials; eight Chrysler officials; four top Nash executives. Other companies included in the union-prepared list are Motor Products Corp.; Eaton Mfg. Co.; Minneapolis-Moline; and Consolidated Vultee. In the case of Studebaker, the pensions range from $7700 to $17,500. The Chrysler pensions listed range from $18,400 to $25,200. In the case of three Chrysler executives, the union is careful to point out that no corporation contribution has apparently been made.

According to union spokesmen, management is opposed to pensions for its workers because this security robs them of the incentive to work hard. "It is different for the men who put their feet up on the desk in walnut paneled offices," the union asserts.

Union spokesmen are telling their members that the amount of pension benefits payable in the first year of the proposed UAW pension plan would be less than companies now set aside for depreciation on plants and equipment.

They are also insisting that the auto companies spend millions of dollars a year on newspaper advertisements, magazines, ads and radio programs.

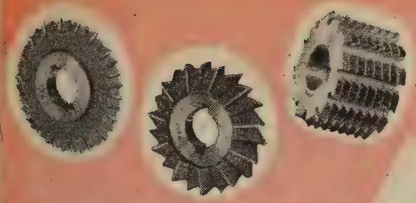
"Men and women in the shops should not be deprived of proper medical care and adequate old age benefits to subsidize glamour girls, slick magazines and radio propaganda," the union says. The union publication continues: GM's Henry J. Taylor never would be missed and the UAW member who is worried about doctor bills or dependency in old age isn't much concerned whether you step down or up into a Hudson or get into it sideways.

The union has also advanced the argument that in 1940 for every dollar the motor vehicle industry spent on wages and salaries, it spent 48¢ for repair and depreciation of its machinery and to advertise its products.

"It cannot in justice spend huge sums of money for depreciation, machinery repair and advertising and at the same time deny the union's demands for help and old age benefits for its workers." The union is contending as always that out of its earnings, the auto industry could grant the UAW-CIO 1949 pension demands, maintain prices and still earn more than an adequate return on its investment.

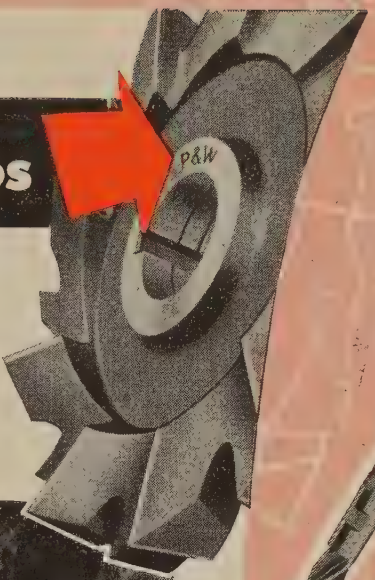
OBSERVERS here predict elaborate statistical demonstrations of union statisticians will be made again this year to show that automotive profits during 1948 were at a rate of 20 pct or more a year on the stockholder's investment.

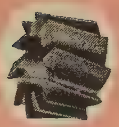
The union case concludes as



THREAD MILLING CUTTERS

PRATT & WHITNEY MAKES ALL KINDS





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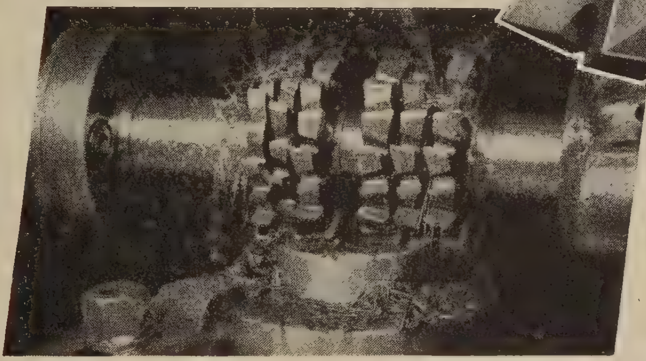
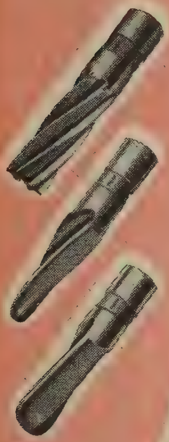
METAL SLITTING CUTTERS AND ROTARY SLITTING DISCS



SHELL, SPIRAL CUT AND "HI-HELIX" END MILLS



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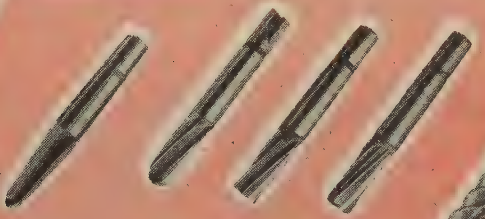

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follows: "Corporations provide for every contingency, including the breakdown and old age of each punch press, furnace and tool; but they plan simply to use and dispose of every worker like a paper towel when he's too old to work but too young to die."

Thus, it appears that the wage tug-of-war in Detroit this year will be a contest in which alleged inequality of the worker will be matched against ability to pay. Obviously, the two viewpoints are miles apart since the union is steadfastly maintaining that earnings are easily adequate to do the job without raising prices while management insists that profits are not nearly adequate to meet even a fraction of the union demands.

Local observers expect one of the most spirited negotiating periods in the history of the industry during 1949. The possibility that John L. Lewis may add fuel to the Detroit fire is not being overlooked here.

* * *

INCIDENTALLY, one of the most significant books on the Detroit labor situation has recently been published by the Viking Press. The author is Clayton W. Fountain, a member of Walter Reuther's staff. Book title is "Union Guy."

The book does not represent the official viewpoint of the union, but it is a well documented story of the unionization of a Detroit worker. Mr. Fountain's career in labor has been far from dull: he was sucked into the Communist Party, broke away from Commie nomination and through energetic application to his job has risen to a responsible position on the union staff.

In his book, Mr. Fountain gives some interesting information about Commie infiltration in the union, the intense factionalism within the UAW-CIO and the broad aspects of Walter Reuther's plans for labor.

Here is an interesting sample of the discussion on communist operations within the framework of the union:

"In Local 235, working through our growing units of comrades, we lost no opportunity to heckle the Martin followers who controlled the local executive board. We held party caucuses before and after all union meetings. Sometimes I was called into skull sessions with the higher-ups of the party to get the fresh line from the commissars.

"WHEN our opponents objected to the injection of (resolutions to carry out the party line) we wore them down in a number of ways. For one thing, we had superior speakers. Our boys not only attended all the union educational classes they were eligible to participate in, but also took lessons in speaking from party experts. We were also trained in the fine points of parliamentary trickery. Sometimes our knowledge of parliamentary procedure was enough in itself to impress the unschooled workers at union meetings—they backed our proposals with the conviction that such learned fellow workers must know what was right for the local.

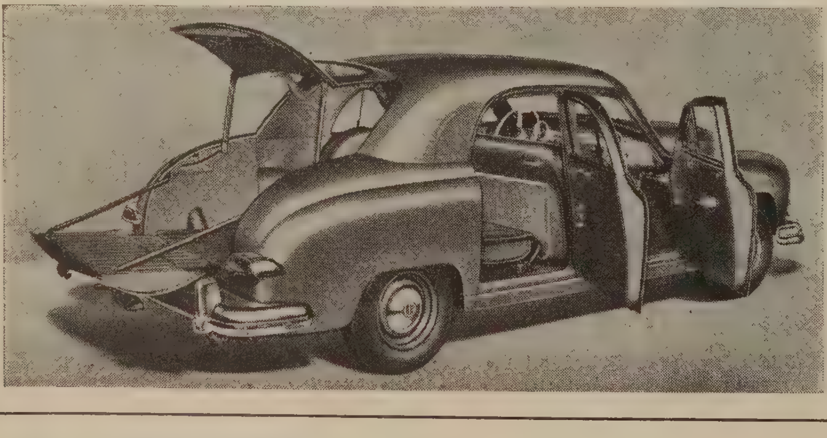
"On other occasions we raised points of order, points of information, divisions of the house, objections to consideration of the question, amendments to the amendment, and appeals from the decision of the chair in endless and swift succession. After 2 or 3 hr of shouting and confused exchanges of parliamentary thrusts with our less skilled opponents, many of the union members left the meeting in sheer disgust and weariness.

"The comrades and their cohorts stayed on in such disrupted meetings until the voting odds were in their favor; then the party line resolutions and motions to contribute funds to CP front outfits passed the meeting with machine-like precision."

Once the Commie Party gained control of an organization, Mr. Fountain points out, it uses all these tactics in reverse and denies the opposition its Democratic rights. Packed committees, stolen elections, physical violence, holding union meetings and elections miles away from the shops—these are the tactics employed by the parties who maintain control of locals in their power.

In the course of his activities with the Communist Party, Mr. Fountain was twice put in jail. In his book, he describes many of the favorite tactics of communist organizations. He also gives the names of communist leaders active in Detroit around 1937. Anyone wishing an insight into the internal workings of an energetic labor union like the UAW-CIO will find Clayton W. Fountain's book a highly interesting source of information.

ROOM FOR EVERYBODY: *Shown in the photograph is the new Kaiser-Frazer Traveler, one of two new utility cars which combine the features of a station wagon and a 4-door sedan. A collapsible seat arrangement allows the rear passenger cushions to be folded away in a matter of seconds to convert the car for cargo hauling. Instead of the conventional single trunk lid, the Traveler has two large hinged panels. The lower section drops downward to provide a tail gate while the top half lifts out of the way.*



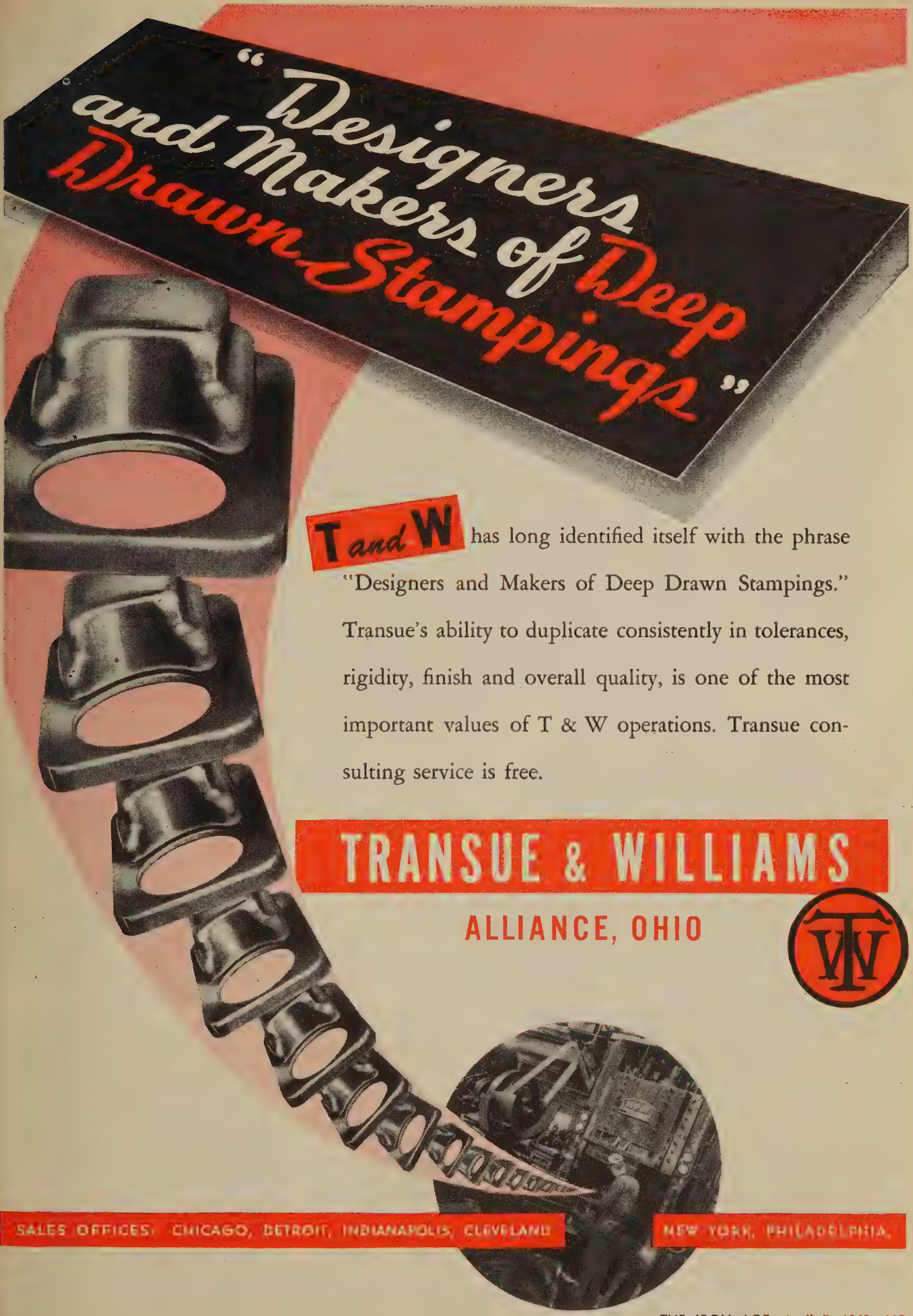
●

Record Truck Inventories

Chicago

• • • **In the opinion** of E. J. Bush, president of the Diamond-T Motor Co., the number of motor trucks in the hands of dealers and in factory branches is probably at the highest point in the country's history.

Bush said that there is now a buyer's market for everything but light trucks. Orders for buses have aso dropped off this year, it is indicated.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Washington . . .

EUGENE J. HARDY

• ECA financing to provide 60 pct of western Europe's 1949-50 imports . . . Steel requests small . . . NSRB drafting standby emergency War Power Act for submission to Congress.

WASHINGTON—Very noticeable progress has been made toward recovery by Western Europe over the past year. Nevertheless, Marshall Plan countries are depending upon ECA-financed goods for approximately 60 pct of their total imports during the coming 1949-50 fiscal year.

This much has been made clear in the extension bill under consideration by the Congress. As it stands, the 15 nations taking part in the program expect to do an import business for the 12-month period amounting to about $6.4 billion. Exclusive of the cost of running the ECA program, aid to dependencies, etc., it is expected that about $3.7 billion worth of actual commodities will be financed by ECA.

Despite the emphasis which has been laid upon the industrial side of European recovery, under the projected program laid out for Congressional inspection less than half the anticipated imports, or 45 pct, would consist of industrial commodities. However, the requested aid through ECA would be split about 50-50 between industrial goods and the food-agricultural types of commodities, including fibers, textiles, etc.

Anticipated imports by the ECA nations call for only $139 million worth of iron and steel, of which $100 million would be obtained through ECA. On the other hand, the largest single category of goods requested by ECA consists of $840 million worth of steel-consuming machinery and equipment, including agricultural equipment. Two-thirds or about $560 million worth of the total would be purchased through ECA and would consist mostly of American-made products.

THESE requirements are now seen as having a negligible effect on the overall domestic economy insofar as steel is concerned. For one thing, steel demand is easing on the home front. For another, because of the time lag between authorizations and actual completed shipments, by the time next year's authorizations are delivered the domestic steel situation should generally be well in hand.

Spelling out the present situation, ECA authorizations of steel mill products to date amount to little more than $105 million as against completed shipments of a third of that amount or about $30 million.

Again, nearly $400 million in authorizations has been issued for purchase of machinery and equipment. Paid shipments as of March 1 were reported by ECA as running around $80 million.

This time lag is general for the ECA program (THE IRON AGE, Mar. 10, 1949, p. 155) except for foods and some other non-industrial commodities. Thus, a majority of shipments, and even orders, are far behind authorizations. This has been an important factor in creating some opposition in Congress to granting the full amount of money asked this year by ECA.

In addition to underwriting the $3.7 billion needed for procurement of Marshall Plan goods, the ECA would also have to put up another $600 million for shipping costs ($300 million), direct aid to European colonies and dependencies, administrative expense, etc. This would make the total estimated cost to the American taxpayer next year amount to about $4.3 billion.

SOME congressmen, however, are endeavoring to whittle this amount down to around $3 billion. They argue that the ECA should first use up the funds which have been appropriated before getting more.

As a result of the span between authorization and shipment, the unspent ECA funds appropriated for last year are variously estimated at from $1.7 to more than $2 billion. Furthermore, they seem likely to remain at such levels. Those backing a smaller appropriation say that this amount, plus new appropriations of $3 billion, would provide ECA with a minimum working capital of $5.7 billion for the coming year.

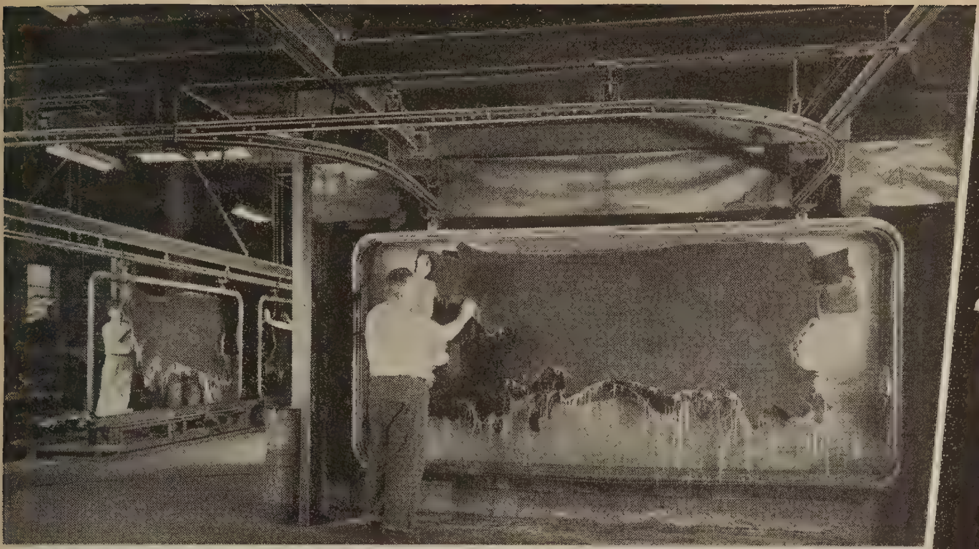
How far this move for reduced 1949-50 ECA appropriations will get is anybody's guess. But most observers here believe that although a few trifling cuts may be made here and there, the administration majority will likely see to it that ECA gets most of the amount requested.

* * *

A tentative draft of an Emergency War Powers Act is now being worked out by the legal staff of the National Security Resources Board. When completed, it will be presented to Congress for enactment as standby legislation.

WHAT the Board hopes to accomplish by such a move is to provide a legal basis for its M-Day plans—that is, to provide that if war ever comes again, its M-Day mobilization plans and the emergency agencies needed for administration would automatically spring into existence without further action by Congress.

The Board hastens to point out that if placed on the statute books, its proposed legislation could go into effect only under one of two conditions—a formal declaration



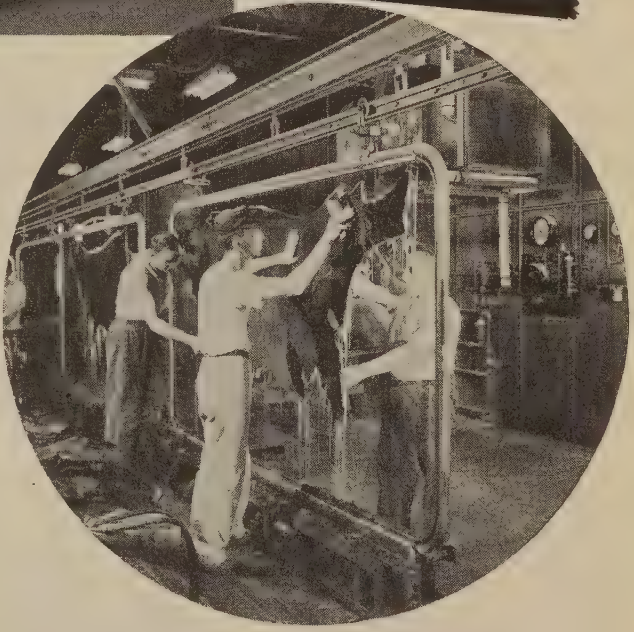
Faster Drying with AMERICAN MONORAIL

Here's a simple MonoRail loop with carriers and "kicker" switches that really speeds up leather drying.

Sides or skins are pasted on glass plates in carrier frames suspended from a MonoRail track; all unnecessary manual handling is eliminated. After the wet leather is pasted on glass, the carrier moves through the dryer without rehandling and the dried leather is stripped from the glass plate for further processing.

An automatic switch transfers the carrier from single to double line travel through the dryer. After the leather has been removed, the carrier is automatically transferred from double to single line travel through the plate washer and pasting stations.

This is just another example of the simplicity of MonoRail application that most economically correlates transfer and processing operations. An American MonoRail engineer can show you how you can increase production and lower costs with American MonoRail Overhead Handling.



Photographs through courtesy of
Proctor and Schwartz, Inc.

THE AMERICAN MONORAIL COMPANY

13103 ATHENS AVENUE CLEVELAND 7, OHIO

of war by Congress itself, or a presidential proclamation that a state of war exists.

In other words, the Board wants to prevent the chaotic situation following Pearl Harbor and to head off delays which attended organization of the WPB, OPA and other World War II agencies. These are provided for in the M-Day plans and under the legislation could go to work immediately on the outbreak of war.

As now being drafted, the proposed legislation would have at least 20 titles. These include provisions for priority and allocation controls, power for government requisitions, authority for plant seizure, exemptions from antitrust laws for the duration, price and wage controls, emergency contract authority and renegotiation powers, authority to settle labor disputes, and other varied responsibilities.

Much of this proposed legislation is still in the hatching process and those in charge are reluctant to discuss it in detail. But the provisions now down in black and white have been worked out in cooperation with attorneys from other government agencies as well as representatives of industry.

Supreme Court's Decision Expected On Legality of Freight Absorption in Industry

Washington

• • • **The Supreme Court** last week heard oral arguments on the pros and cons of delivered prices and began consideration of the controversial issue that now appears to be approaching final settlement.

The question of whether or not freight absorption may legally be employed in steel and scores of other industries will probably be answered by the high court some time this year. Broadly speaking, the court may find (1) that freight absorption is legal, (2) that it is illegal, or, (3) that it is legal if employed under certain specified conditions.

The case argued last week involves an order of the Federal Trade Commission against freight absorption as practiced by the rigid steel conduit industry. Lower courts have upheld FTC in its contention that identical delivered prices in the industry are in violation of the federal antitrust statutes.

FTC's order is directed against 8 producers who manufacture the product they sell. These firms are Fretz-Moon Tube Co., Inc., Enameled Metals Co., General Electric Co., Laclede Steel Co., National Electric Products Corp., Spang Chalfant, Inc., Triangle Conduit & Cable Co., Inc., and Youngstown Sheet & Tube Co.

The order is also directed against 4 companies who sell conduit made for them by one or more manufacturers. These 4 firms are Clayton Mark & Co., M. B. Austin Co., Steelduct Co., and Republic Steel Corp.

All these producers told the court last week that they are contending "only for the preservation of their right—individually and without agreement—to continue to carry on their businesses in areas in which they always have been carried on; and for the right not to be excluded from those areas by artificial barriers erected by the FTC."

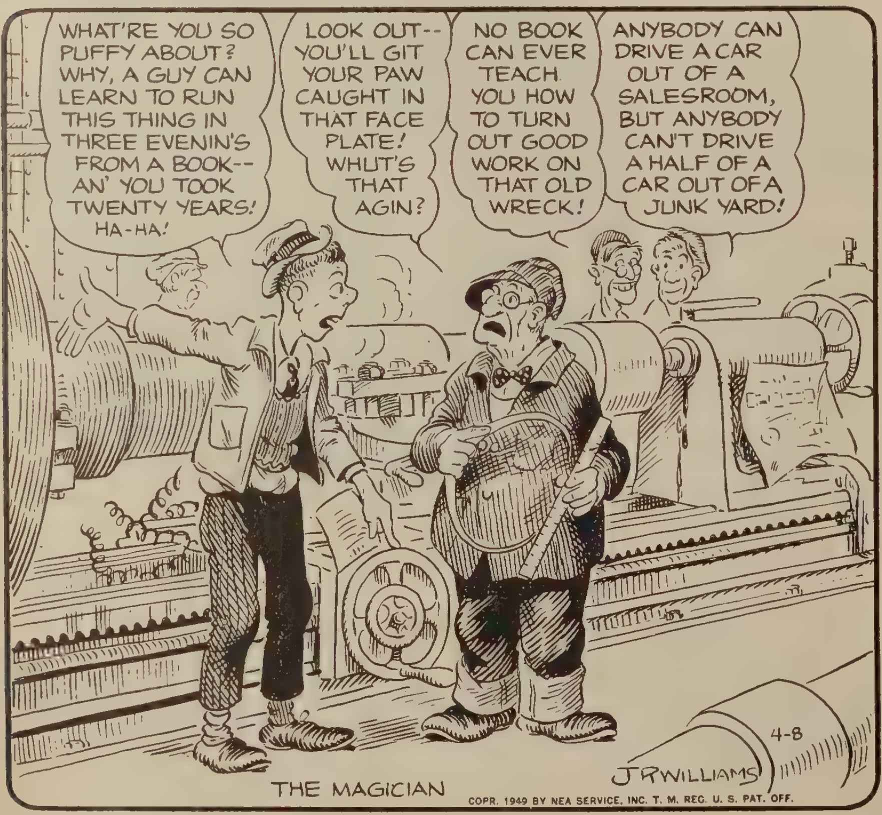
The producers told the court that FTC's order to stop absorbing freight is not only not required by Congress, but also is in "direct conflict" with the theory of free competition underlying all of the antitrust laws.

Enforcement of the FTC order would not merely regulate, but would destroy, a large part of the business of the steel conduit producers, the court was told. The producers said that enforcement of the FTC order would prohibit the independent use of "lawful commercial practices."

Counsel for FTC, on the other hand, told the court the Sherman Antitrust Act gives the commission power to halt practices "which produce, or are likely to produce, restraints and monopolies against which the antitrust laws are directed."

"Petitioners' (conduit producers') practices not only threaten to, but do, suppress price competition, one of the foremost evils which the antitrust laws are designed to prevent," FTC declared.

THE BULL OF THE WOODS BY J. R. WILLIAMS


WHAT'RE YOU SO PUFFY ABOUT? WHY, A GUY CAN LEARN TO RUN THIS THING IN THREE EVENIN'S FROM A BOOK-- AN' YOU TOOK TWENTY YEARS! HA-HA!
LOOK OUT-- YOU'LL GIT YOUR PAW CAUGHT IN THAT FACE PLATE! WHUT'S THAT AGIN?
NO BOOK CAN EVER TEACH YOU HOW TO TURN OUT GOOD WORK ON THAT OLD WRECK!
ANYBODY CAN DRIVE A CAR OUT OF A SALESROOM, BUT ANYBODY CAN'T DRIVE A HALF OF A CAR OUT OF A JUNK YARD!
4-8
J.R.WILLIAMS

THE MAGICIAN

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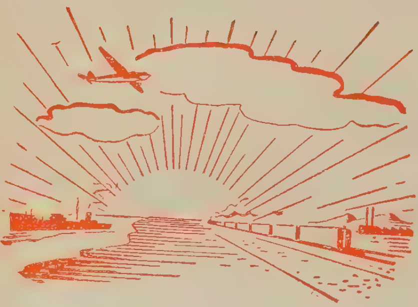
West Coast . . .

ROBERT T. REINHARDT

• Scrap price decline in West laid to large stocks, imports and reaction to Eastern slump . . . Further indications of softening steel market come from Utah.



SAN FRANCISCO — Bulging scrap stocks at the plants of principal western producers, stepped-up receipts of overseas scrap, and the price decline in the East gave ample warning to dealers and brokers in the West of the price dip which became effective Apr. 1.

Prices for No. 1 and No. 2 heavy melting and No. 1 and No. 2 bales declined an average of $4.33 per gross ton as against the national drop last week of $3.75 per gross ton. However, this comparison is not directly applicable since former West Coast prices had been made f.o.b. shipping point and beginning the first of this month buyers reverted to the prewar custom of demanding that the price include delivery to the consuming point, which had been abandoned about 2 years ago.

While principal scrap users refused to give exact information as to tonnages in their scrap yards, physical evidence indicates that all of them have ample supplies for at least 3 week's operations without additional purchases and what little buying is being done is in relatively small lots. Bethlehem Pacific Coast Steel Corp. is definitely out of the market in the San Francisco area for some weeks and is buying only in limited amounts in Seattle and Los Angeles. Columbia Steel Co. has suspended all shipments of scrap for about 2 weeks although purchases are still being made for future shipments. Kaiser Co., Inc. is buying only in very small lots for its Fontana, Calif., plant and minor producers here are following the same general practice.

Dealers caught in this latest price drop look unhappily at the net available to them after paying the shipping cost to buyers' plants. Freight on heavy melting scrap is approximately $4.00 per ton from several important collection points to the nearest steel furnaces which means that collections in the hinterlands will come to a stop. Farmers and others in the outlying areas are lucky to get $5.00 to $8.00 per ton for scrap almost completely prepared for the furnaces and dealers doubt that they can expect much material to originate under those circumstances.

Last week ships at Seattle, Richmond, Calif., and Los Angeles were each unloading approximately 9000 tons of scrap collected in the Pacific and it is estimated that approximately 30,000 tons of this material had been landed on the Coast during the past month. While no accurate figures are available, it is reliably estimated that approximately 75,000 to 100,000 tons of overseas scrap is expected to be delivered on the Coast within the next 2 or 3 months.

COST of this overseas scrap is a factor which has caused at least one buyer to try to wiggle out of a contract on the grounds that delivery schedules were not adhered to. This action is understandable in view of the fact that reliable authorities believe the cost of such material laid down at Coast ports approximates $40 per gross ton, against the current price for No. 1 heavy melting of $22 per ton delivered to the consumer.

There is also some dissatisfaction over the quality of the scrap arriving from Japan and there are rumblings which indicate western buyers may not be entirely happy with some of the commitments made by officials in the East.

Along with price cuts buyers are being much more selective in their purchases and the lowly No. 3 bale which, until recently, was considered fair game, is practically out of the market although a price of $15 per gross ton is quoted.

This latest sweeping price reduction on the Coast follows that of 6 weeks ago when No. 1 heavy dropped from $27.50 to $25 per gross ton f.o.b. shipping point. In other words No.1 heavy melting has dropped $5.50 within the past 6 or 7 weeks, but the dealer is losing considerably more than the $5.50 differential indicated because he now pays the shipping cost.

•

West Coast Export Men See European Competition

Los Angeles

• • • **Export dealers in** southern California report European competition in the sale of steel to Far Eastern countries is beginning to return for the first time since before the war.

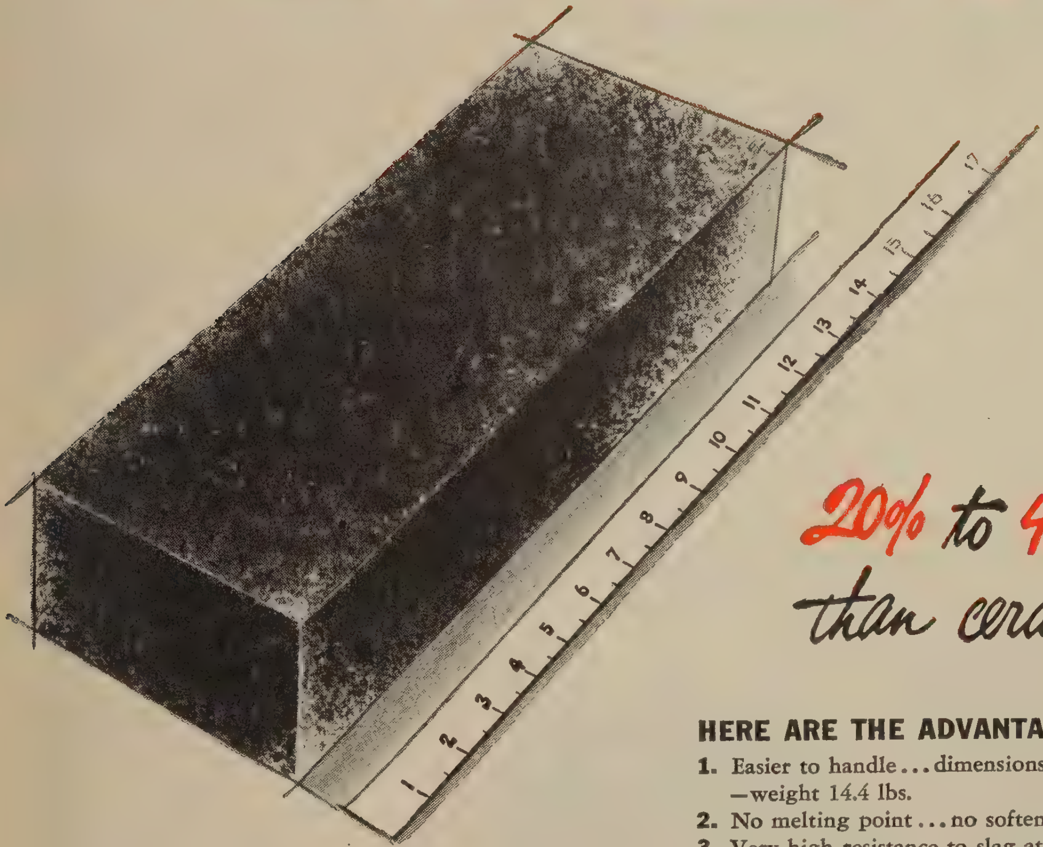
Commenting on the reports, Paul G. Hoffman, European Recovery Program Administrator and former president of the Studebaker Corp. indicated that competition will increase even more when governmental red tape so prevalent in many European countries is cut further.

"European production is increasing," Mr. Hoffman observed. "European exports of steel will offer heavy competition in all parts of the world and will help in cutting U. S. aid by building up countries abroad," he reported further to THE IRON AGE.

"Naturally facilities are limited and types of production are comparatively few. Some difficulty is experienced in obtaining raw materials," he added.

The former auto manufacturer opined that United States capital investments of most sorts in Europe still are poor risks. Up for study by congress, however, have you tried "National" Carbon?

a *new* 13½" Carbon Brick—



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Key brick 13½" x (6"-5") x 3"—weight 13.2 lbs.
Straight brick 9" x 6" x 3"—weight 9.5 lbs.
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***Weights in lbs. per cubic foot of carbon vs. ceramic brick: Carbon—96. Firebrick—120-130. Acid-proof brick—148. Chrome brick—175-180.**

probably will be the question of whether it is sound United States public policy to assume political risks on investments all over the world. "Political risks," he emphasized, "do not include business risks."

In the Far East and South America, competition in the sale of bars has increased because of lower prices offered by France and Belgium. Previously, the European countries could offer only delivery in the future. Orders from these two countries placed months ago are being filled now, however, offsetting the advantage of quicker delivery offered by local exporters.

As an example of the competition, one exporter said he recently quoted a price on 900 tons of ¼ in. wire rod with only a 3 pct margin over the U. S. Steel price. He lost the deal, however, when Belgium wire rod became available and then Japanese nails were offered for sale against the Belgium wire rod price.

Roberto Regala, Consul General for the Philippine Republic, reported here that during the first 6 months of 1948, his country imported from the United States goods totaling $266 million and exported here only $109 million, a favorable balance for this country of $157 million. Before the war U. S. Foreign trade with the Philippines totaled only $181 million per year.

•

Western Airframe Makers Doing Better Financially

Los Angeles

• • • **Indicating that** government contracts have put airframe manufacturers over their financial humps, for a while at least, western aircraft companies financial reports show substantial profits as compared with large losses a year ago.

Douglas Aircraft Co. reported for the fiscal year ending Nov. 30, there was a net profit of $5,829,206, as compared with a loss of $2,140,579 for the same period a year earlier. The profit was equal to $9.71 a share of outstanding capital stock.

More than 97 pct of a backlog of $232,989,000 was for military planes, with Air Force orders accounting for 43 pct mainly in the giant C-124 transport, and Navy orders taking up 54 pct of the total. Douglas manufactures a jet fighter and dive bomber. One of the projects now under way is to replace some of the more than 6000 DC-3s now in service.

The public report gave no breakdown for the pressed metals division which was only in its infancy at that time.

A typical company was North American Aviation which showed a net income of $2,780,000 for the first 6 months of its fiscal year ending Mar. 31. This compares with a net income of $753,438 for a like time a year ago.

Consolidated Vultee Aircraft Corp. at San Diego showed a net profit of $987,284 for the quarter ended Feb. 28, as against a deficit of $2,765,916 in the same period in 1948. The company has a backlog of about $190 million.

Boeing Airplane Co., of Seattle, reported its first postwar profit year, with a net of $1,715,908 being made in 1948. The company's total sales for the year were $127,304,661.

Included among the expenses listed in the report was a write-off of $7,200,000 of a total estimated loss of 10.5 million on the Stratocruiser commercial transport project. This portion, it was indicated, represents the amount required to reduce the Stratocruiser work-in-process inventory as of the close of the year to estimated sales value. The remaining portion applies to work yet to be performed.

•

Buyers Relax Pressure

Salt Lake City

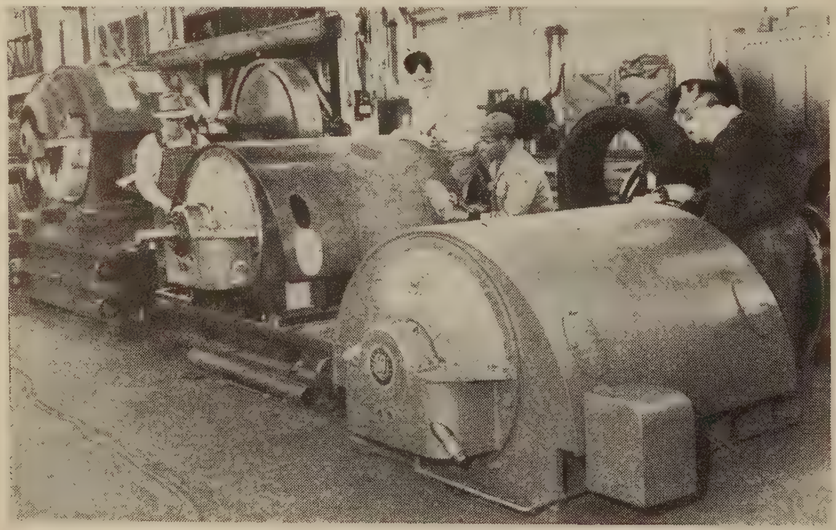
• • • **Steel fabricators** of this area, who a few short weeks ago were cajoling, pressuring and threatening basic producers for larger allocations, are now passing up opportunities to buy and "waiting to see what happens."

A check of major fabricators indicates that the only products now in the short supply category are plates and possibly sheets. Dr. Walther Mathesius, president of Geneva Steel Co., expects plates to be in ample supply soon.

Morris Rosenblatt, president of Structural Steel & Forge Co., reports that the Eimco group of fabricating plants received 56 carloads of steel in March. During the winter they considered themselves fortunate if they received 10 to 15 carloads.

Continued tightness of plate arises from large commitments for pipelines.

FOG FIGHTERS: *Two 1000-hp electric motors, most powerful built to date at the Westinghouse Electric Corp.'s plant at Sunnyvale, Calif. will shortly be doing a vital job at the Los Angeles airport pumping fuel that will burn fog. The motors will drive pumps to force fuel through long lengths of pipe feeding burning nozzles along the airport's runways.*



RUST

-the fight against it never ends!

HERE'S NEWS ABOUT TWO FAMOUS FIGHTERS:

They've come through three wars, and are now revamped to meet peace-time needs—still urgent, because the ravages of rust never cease unless metal is protected. The two famous names in rust preventives are:

COSMOLINE—a brand first registered in 1881 and still being used for many types of Houghton rust preventives. This name is now being particularly applied to products meeting government specifications. There's a new Cosmoline to meet AXS-673, another recently approved for AN-C-124.

RUST VETO—Many men think of this Houghton brand when considering rust preventives for industrial use, rather than for required "specs." Hence Rust Veto will be the name increasingly applied to Houghton preventives intended for industrial protective applications. There are new Rust Veto products, too—the result of our many years of experience and research in the never-ending fight against rust. Tell the Houghton Man *your* problem, or write—

E. F. HOUGHTON & CO.
303 W. Lehigh Ave., Phila. 33, Pa.
Service and Sales in all principal cities

PERSONALS

○ ○ ○

• **Edward A. Miller** has been appointed general manager of the building panel division of Detroit Steel Products Co., Detroit, with his headquarters in that city. He has been chief engineer of the division for the past three years. Mr. Miller succeeds **William Gillett,** who has been appointed vice-president, assistant to the president.

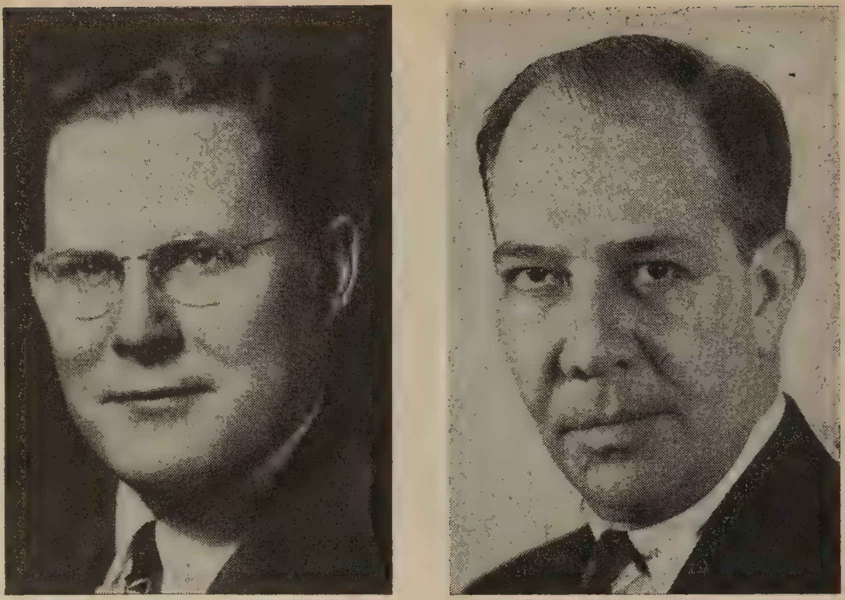
• **Ronald E. Griffiths,** who served for three years as supervisor of the research laboratory of American Steel & Wire Co., Cleveland, has been appointed assistant director of research for the company. Mr. Griffiths has been associated with the Wire company on various technical assignments since 1937. In his new post, Mr. Griffiths succeeds **Willis T. Cramer,** who has been transferred to the position of division metallurgist for corrosion-resisting alloys, in the company's metallurgical department. **Roland O. Hartman** has been named to succeed Mr. Griffiths as supervisor of the research laboratory. He has been a member of the research staff since 1936.

• **Clifton M. Kolb** has been elected senior vice-president and a member of the executive committee of the Glidden Co., Cleveland. Mr. Kolb joined Glidden in 1922, has been secretary of the company since 1929 and was elected a director of the company in 1938.

• **Frank Weir** has been promoted to Pittsburgh district sales manager, Harbison-Walker Refractories Co., Pittsburgh, succeeding Harold S. Dunn. Mr. Weir, who joined Harbison-Walker in 1923, had formerly served as St. Louis district manager.

• **John D. Judge,** executive vice-president, has been elected a director of the Tube Reducing Corp., Stamford, Conn.

• **Paul E. Lundquist,** formerly vice-president of Republic Drill & Tool Co., has joined the firm of Pettibone Mulliken Corp., Chicago, as sales manager of the newly-formed construction equipment division.



JOSEPH G. SMITH (left) and W. A. HIBLER (right), purchasing agents, Pittsburgh Steel Co.

• **Joseph G. Smith,** formerly New York district sales manager and **W. A. Hibler,** formerly assistant purchasing agent, have been named purchasing agents for Pittsburgh Steel Co., Pittsburgh. Mr. Smith joined the company in 1937 and has served as district sales manager in the Pittsburgh and New York districts. Mr. Hibler joined the company in 1942 and has served as a buyer and assistant purchasing agent.

• **John M. Mulholand** has been appointed traffic manager of the Youngstown Sheet & Tube Co. at Chicago. He had previously served as manager of railroad sales.

• **Frank R. S. Kaplan** has been elected acting president of Copperweld Steel Co., Pittsburgh. Mr. Kaplan has been connected with Copperweld since its organization in 1915. He has served as general counsel and secretary, and since 1947 has been first vice-president.

• **L. B. McCarthy** has been appointed vice-president in charge of operations of the General Fireproofing Co., Youngstown. Mr. McCarthy, who has been 45 years with General Fireproofing, has been succeeded as general superintendent by **A. H. Anderson,** who has served as assistant general superintendent since 1946. Mr. Anderson joined the company in 1916 and for many years specialized in the design of tools and fixtures.

• **Joseph A. Marland** has been appointed sales manager and **Thomas A. Jones,** assistant sales manager, W. A. Jones Foundry & Machine Co., Chicago. **Joseph A. Guyer** has been named advertising manager. Mr. Marland has been with the Jones organization since 1926 and prior to his promotion had been handling sales in the Chicago territory. Mr. Jones has been with the company since 1940, serving as secretary and personnel manager. He continues his duties as secretary in addition to his new position. Mr. Guyer joined the firm in 1929 and has had estimating, engineering sales and advertising experience with the organization.

• **R. R. Estill** has been named general superintendent, fluorspar division, U. S. Coal & Coke Co., Mexico, Ky. Mr. Estill joined the company in 1939 as superintendent of the company's Thorpe Mine in Gary, W. Va. Later he was transferred to Lynch, Ky., where he became assistant general superintendent. He then went to Washington acting as a special representative for the firm and in 1945 was named combustion engineer for H. C. Frick Coke Co.

• **I. W. Wilson,** vice-president in charge of operations and a director of the Aluminum Co. of America, Pittsburgh, has been named senior vice-president of the company.

THESE BOLTS ARE SOMETHING SPECIAL...

Down time is costly. Earth-moving equipment, tractors and other heavy machinery need bolts that can resist extremely severe stress, shear and impact without wear or breakage.

"National" makes special bolts for such rugged service from high carbon or alloy steel, specially heat-treated.

These bolts can really stand the gaff.

Exceptional experience and facilities in *cold heading* enable us to offer unusual service on all types of "specials" that can be made by the upset process. We are often able to effect substantial savings.

Please send us your inquiry.

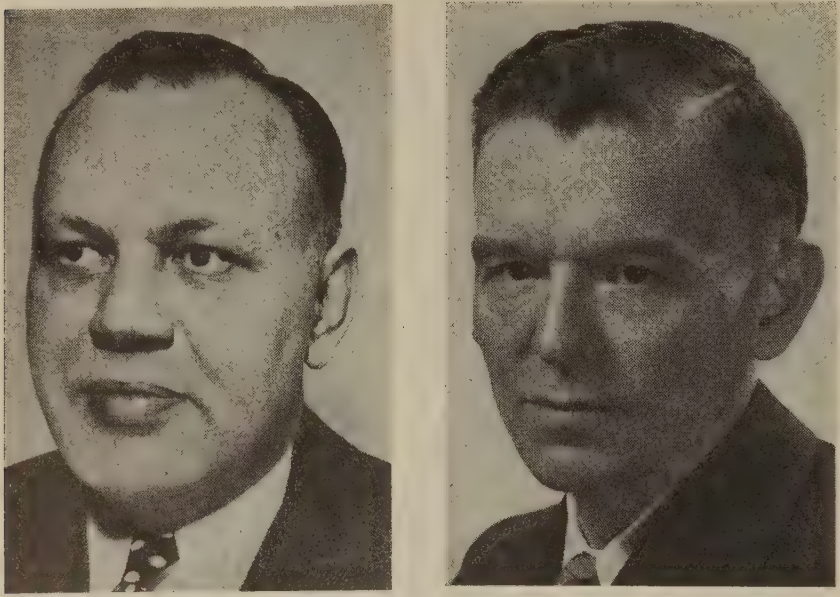
THE NATIONAL SCREW & MFG. CO.
Cleveland 4, Ohio

PACIFIC COAST: NATIONAL SCREW & MFG. CO. OF CAL.
3421 S. Garfield Ave., Los Angeles 22, Cal.

National
HEADED AND THREADED
PRODUCTS

"National" Products Include

HODELL CHAINS · · · CHESTER HOISTS



JAMES M. DARBAKER (left), general manager of sales, and STEPHEN M. JENKS (right), manager of operations, Carnegie-Illinois Steel Corp.

• **James M. Darbaker,** Chicago manager of operations for the Carnegie-Illinois Steel Corp., Pittsburgh, since 1947, has been appointed general manager of sales. He has been succeeded as manager of operations by **Stephen M. Jenks,** formerly general superintendent of the Gary Works. Both men have their headquarters in Pittsburgh. Mr. Darbaker succeeds J. Douglas Darby, who became vice-president in charge of sales for Carnegie-Illinois last year. **John Vohr** has been appointed general superintendent at the Gary Works, succeeding Mr. Jenks.

• **T. Hollister Mabley** has been appointed vice-president and general manager of Mechanical Heat & Cold, Inc., Detroit.

• **Donald G. Morse** has been appointed director of the employe suggestion plan section of the employe relations staff of General Motors Corp., Detroit, succeeding John M. Jerpe, who died. Mr. Morse has been with G.M. since 1935 and joined the employe relations staff in 1945.

• **William H. Schwinger,** vice-president and treasurer and **Harold G. Rogers,** vice-president in charge of sales, Irving Air Chute Co., Inc., Buffalo, have been elected to the board of directors, filling vacancies caused by the deaths of **James C. Willson** and **George Waite.**

• **H. L. Kent,** formerly manager of the railroad department of Ingersoll Rand Co., has been appointed assistant to the president of Standard Railway Equipment Mfg. Co. of Chicago, with his headquarters in New York.

• **Nicholas M. Walker** has been appointed to the packaging and labeling division of Pennsylvania Salt Mfg. Co., Philadelphia. Mr. Walker has been associated with Pennsalt since 1945.

• **L. M. Gumm** has been named metalworking consultant for the industrial sales department of Westinghouse Electric Corp., East Pittsburgh, Pa. Prior to this new assignment and for the past 11 years, Mr. Gumm has been manager of the steel mill and metalworking section of the industrial sales department. **K. M. Patterson** has been appointed manager of the steel mill and metalworking section. Mr. Patterson had formerly served as special representative in the transportation and generator division.

• **John Loudon** has been elected vice-president in charge of production, Harper Electric Furnace Corp., Niagara Falls, and **Edward G. Pierson** has been elected vice-president in charge of purchases for the company. Both have been identified with Harper for many years.

• **H. Paul Gant** has been elected chairman of the board, Main Belting Co., Philadelphia. **Roland C. Disney** has been elected member of the board and vice-president in charge of sales. Mr. Gant had formerly served as vice-president of the Carrier Corp. and Mr. Disney had been vice-president of Whitcomb Locomotive Works, a division of Baldwin Locomotive Works.

• **Willis T. Windle** has been elected treasurer and controller of the Carborundum Co., Niagara Falls, N. Y., succeeding Austin W. Clark, who died. He had formerly been associated with the National Supply Co., Pittsburgh.

• **Ernest F. Becher,** vice-president and general manager of the Barcalo Mfg. Co.'s Chandler St. plant in Buffalo, has been elected executive vice-president in charge of manufacturing of both plants in Buffalo.

• **William S. Loose,** formerly director of the development section of the magnesium laboratory, has been appointed magnesium division sales manager for Dow Chemical Co., Midland, Mich. Mr. Loose joined Dow Chemical in 1927 and has been continuously associated with magnesium operation since he started with that company.

• **Frank R. Campbell** has been named sales development manager for the southeastern sales division of Replacement Tire Sales of the B. F. Goodrich Co., Akron, Ohio. **Clare E. Sears** succeeds Mr. Campbell as Washington district manager.

• **Harold R. Boyer, Thomas M. Belshe** and **O. C. Hall** have been elected directors of Lear, Inc., Grand Rapids. **A. F. Haiduck** has been elected a vice-president and **A. G. Handschumacher,** assistant secretary.

• **J. Sydney Snelham,** vice-president and comptroller, Continental Can Co., has been elected a director of the Vulcan Detinning Co., Sewaren, N. J.

• **Herman C. Strom,** has retired as vice-president of Pittsburgh Steamship Co. Mr. Strom started as a clerk with the company in 1907 and has been vice-president since 1941.

• **Walter Carlson** has been made assistant manager of sales of Benjamin Wolff & Co., Chicago. Mr. Carlson formerly had charge of the Chicago district.

• **F. H. Jones** has been named credit manager of the Kaiser Co., Inc., Oakland, Calif. Mr. Jones has been associated with the Kaiser organization for the past six years.

• **Wilbert L. Terre** has been appointed chief chemist, Industrial Smelting Corp., Chicago Heights, Ill. Mr. Terre had previously served as chief analytical chemist of Edwal Laboratories.

• **William C. Graham** has been added to the marketing group and **Simon H. Wareham,** to the manufacturing group, McKinsey & Co., New York. Mr. Graham had formerly been assistant to the sales manager of the Rubberset Co.'s specialty division and Mr. Wareham had been associated with Eastman Kodak Co.

• **Robert M. Oliver** has been appointed to the newly-created position of general merchandise manager in the traffic appliance division of Landers, Frary & Clark, New Britain, Conn.

• **L. Louis Malm,** who had formerly served as plants and process engineer, has been named chief engineer of the Industrial Rayon Corp., Cleveland.

• **Arthur A. Blue** has been appointed manager of the instrument division of Thomas A. Edison, Inc., West Orange, N. J. Mr. Blue, who has been acting as assistant manager of the division for the past six months, had formerly been associated with W. W. Slocum & Co.

• **R. E. Kenney** has been appointed midwest sales representative for the Kold-Hold Mfg. Co., Lansing, Mich.

• **Gilbert L. Watson** has joined Rawleigh Moses & Co., Inc., in the Business Development Dept. Mr. Watson was formerly president of Republic Precision Mfg. Co.

• **G. Webber Knight** has been appointed to head the Washington, D. C., office of the McPherson Co., Greenville, S. C.

STANLEY M. HUNTER, executive vice-president, American Hoist & Derrick Co.

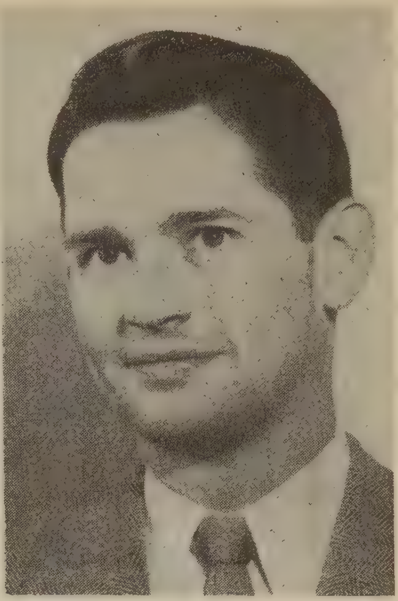
• **Stanley M. Hunter** has been elected to fill the newly-created position of executive vice-president of the American Hoist & Derrick Co., St. Paul. Mr. Hunter joined the sales department of American Hoist in 1936 and has served as vice-president of sales and a member of the board since 1945.

• **Earle W. Mills** has been elected executive vice-president and a director of Foster Wheeler Corp., New York. **David McCulloch,** formerly executive vice-president, has been named vice-chairman of the board.

• **Paul J. Welsh** has been appointed to the research staff of E. F. Houghton & Co., Philadelphia. Mr. Welsh had foremrly been associated with B. F. Goodrich Co., Akron, Ohio.

• **Dawson Spurrier** has been appointed president of High Vacuum Processes, Inc., Philadelphia. Since 1944 when Mr. Spurrier assisted in the formation of the organization, he has served as a director and vice-president. **Austin K. Smithwick** has been appointed to the board of directors.

• **Wilfred J. O'Sullivan** has been named manager of the hourly personnel department of the industrial relations staff, Ford Motor Co., Dearborn, succeeding E. M. Baker.



JAMES E. ZIEGLER, sales engineer, Cooper Alloy Foundry Co.

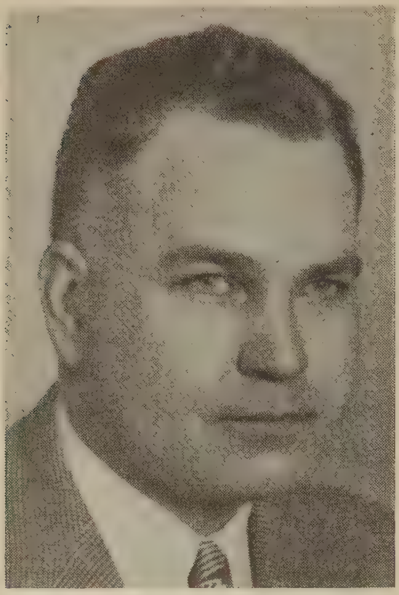
• **James E. Ziegler** has been appointed to the sales engineering force of the Cooper Alloy Foundry Co., Hillside, N. J. Mr. Ziegler is stationed in Cleveland.

• **Paul P. Smith** has been appointed renewal sales representative for the radio tube division of Sylvania Electric Products, Inc., New York.

• **M. L. Judd** has been named manager of the Warm Air Furnace Div., U. S. Radiator Corp., Detroit. Mr. Judd had formerly been sales manager of the Delco Appliance Div., General Motors Corp., in Rochester.

• **Ernest C. Britton, James F. Curtiss, Michael C. Dolak, Harry MacCullum, Jr.** and **Henry L. Shepard** have been elected directors of Plume & Atwood Mfg. Co., Waterbury, Conn. **Henry A. Delvy,** who served as controller for many years, has been elected treasurer.

• **Anita Berger, Otto T. Englehart, Maurice A. Hallam, Richard M. Quimby** and **Daniel D. Schwartz** have been elected directors of the Beryllium Corp., Reading, Pa. Mr. Schwartz has been elected chairman of the board; Mr. Englehart, president; **Matthew J. Donachie,** vice-president; Mr. Quimby, secretary, and Anita Berger assistant secretary and treasurer.



THOMAS F. O'BRIEN, metallurgical engineer, MacDermid, Inc.

• **Thomas F. O'Brien** has been appointed to head a newly-formed department of MacDermid, Inc., Waterbury, to develop and promote the Troxide compounds of the Waverly Petroleum Products Co. Mr. O'Brien, a metallurgical engineer, had formerly headed the industrial chemical division of Waverly and had previously been associated with the Philco Corp. and General Motors Corp.

• **Robert L. Zahour** has rejoined the lamp division of Westinghouse Electric Corp. in Bloomfield, N. J. Mr. Zahour joined Westinghouse in 1923 and in 1935 left the company, becoming associated with Connecticut Light & Power Co. Most recently he has been connected with North American Philips Co., Inc.

• **Arthur B. Meredith** has been appointed chairman of the board of Meredith, Simmons & Co., Ltd., the Canadian subsidiary of National Starch Products, Inc., New York.

• **F. C. Schulz** has been named office and operating manager and **J. J. Allman** has been appointed manager of accessories sales in the Associated Lines sales division of B. F. Goodrich Co. Mr. Schulz has been in the division since 1935. Mr. Allman, who has been with the company 12 years, succeeds **M. J. Way**, who enters his own business.

ROY PERKINS, manager, Blast Furnance Dept., F. H. McGraw & Co.

• **Roy Perkins** has been appointed manager of the blast furnace department of F. H. McGraw & Co. in Pittsburgh. Mr. Perkins has had many years of blast furnace experience, and prior to his recent appointment, had been working on blast furnace projects for the company.

• **E. King Graves** has been appointed sales manager of Edward Ermold Co., New York. Mr. Graves joined the Ermold Co. early in 1948 as sales representative and later that year was made assistant sales manager.

• **Charles E. Pearson** has been appointed coordinator of sales, production and engineering for the new speed grip nut retainer division of Tinnerman Products, inc., Cleveland.

• **W. H. Hammond** has been elected vice-president in charge of sales, Marion Metal Products Co., Marion, Ohio. Mr. Hammond had recently resigned as vice-president of all divisions of Gar Wood Industries, Inc.

• **Robert C. Tait** has been appointed president and a director of the Stromberg-Carlson Co., Rochester, N. Y., succeeding **Dr. Ray H. Manson**, who has become chairman of the board. **Wesley M. Angle**, retiring chairman, has been elected honorary chairman of the board.

OBITUARY...

• **Harvey C. Rentschler,** 68, retired director, research division, Lamp Div., Westinghouse Electric Co., Bloomfield, N. J., died March 23.

• **Arthur Purnell,** 60, district sales manager in charge of the Chicago sales office of the Youngstown Sheet & Tube Co., died suddenly Apr. 1 of a heart attack at his home.

• **Virgil L. Downing,** 59, chief design engineer, automobile division, Nash-Kelvinator Corp., died March 21.

• **Frank S. Badger,** 81, internationally known hydraulic engineer, who directed large projects in South America, Burma, Australia and New Zealand, died March 17 in Arlington, Ill. He was formerly of Lowell, Mass.

• **Albert W. Russel,** 73, founder and chairman of the board, Detroit Bevel Gear Co. and Republic Gear Co., Detroit, died in Cleveland, March 21.

• **Benjamin F. Waterman,** 69, retired head of the mechanical planning department, Brown & Sharpe Mfg. Co., Providence, died March 22.

• **William A. McIntyre,** 71, formerly superintendent of the Stafford Foundry, Hyde Park, Mass., died in Portsmouth, N. J., March 20.

• **Clarence W. Gallagher,** 52, assistant sales manager of Reed-Prentice Co., Worcester, died March 15.

• **Clifton Slusser,** 56, vice-president, Goodyear Tire & Rubber Co., Akron, Ohio, died March 25.

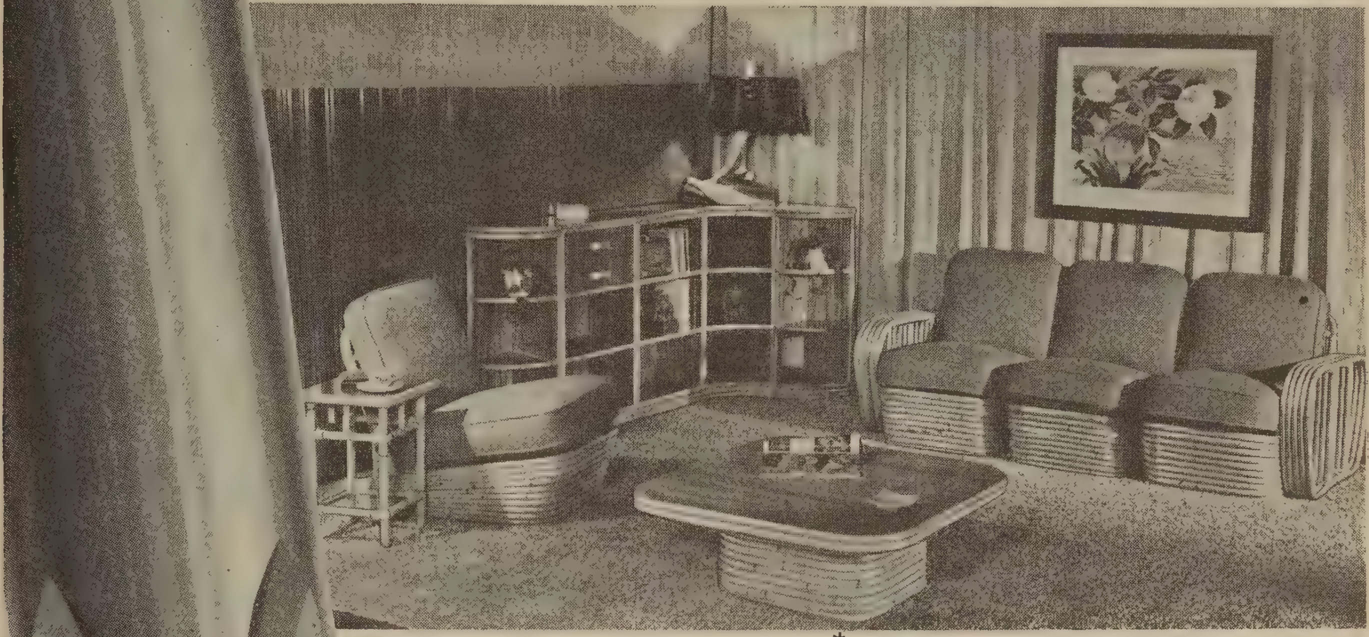
• **George L. Lilly,** 55, vice-president in charge of operations of the Isthmian Steamship Co., New York, died March 28.

• **Oscar Lampl,** 44, assistant manager of the Dravo-Doyle Co., Pittsburgh, died March 23.

• **Antonio Frankini,** 59, president and founder of Frankini Contruction Co., died March 20 at Medford, Mass.

No Spoilage in Production...

No Spoilage of Sales...



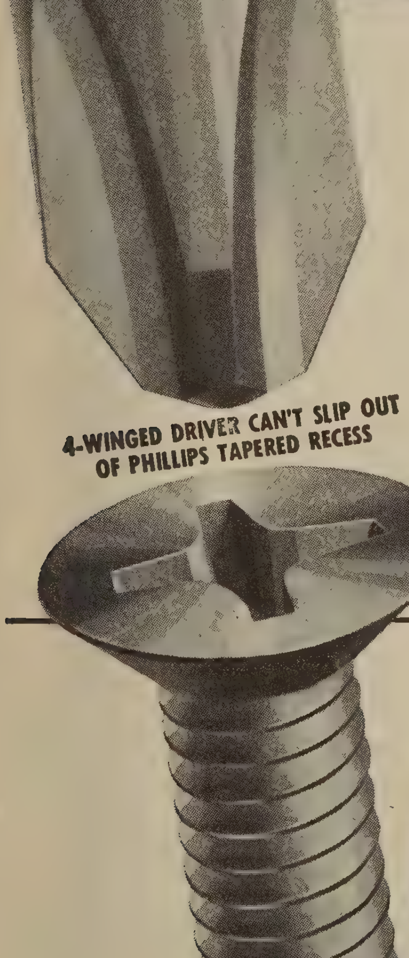
*"TROPITAN" Furniture by Ritts Co., Los Angeles, Cal.

...when AMERICAN PHILLIPS SCREWS are used to fasten fine furniture like this*

"EASY CHAIRS" TO BUILD: Take a look at this handsome living room. How would *you* like to try building furniture like *that*, with wobbly screws and slipping, slashing drivers? Well, neither would the builders of this visibly top-quality line. So they play safe. They use American Phillips Screws *instead of binding the frame together*, . . . and haven't a worry in the world about cost, spoilage, or complications in production. In fact, they guarantee the frame for life.

"EASY CHAIRS" TO SELL: Nor do they have any worry about their ultra-modern designs being spoiled by old-fashioned, ugly, slotted screws . . . nor about any burred screwheads left to injure customers and clothes and spoil repeat sales. For against all these former threats, they now have American Phillips Protection at every fastening point. Now, how about *you?* What fastening worries do *you* have? *Write.*

American Screw Co., Providence 1, R. I.; Chicago 11: 589 E. Illinois St.; Detroit 2: 502 Stephenson Bldg.


4-WINGED DRIVER CAN'T SLIP OUT OF PHILLIPS TAPERED RECESS

AMERICAN PHILLIPS *Screws*

ALL TYPES

ALL METALS: Steel, Brass, Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)

European Letter . . .

• Future of capital expansion, rising productivity and international trade at stake in development of backward areas . . . Only one country has sufficient surplus wealth to fertilize outside world.

LONDON—In one sense, the transforming of Mr. Truman's Fourth Point from a general aspiration into a practical program has begun. On February 25, Mr. Willard Thorp formally laid the Fourth Point before the Economic and Social Council of the United Nations and invited the nations to cooperate with Uno in devising a program for raising the standards and prosperity of backward areas. A week later, as a result of his initiative, the Council adopted a comprehensive resolution, calling upon the Secretary General to prepare a report for the next meeting of the Council, in Geneva in July. This report would have three purposes—to provide a plan for an expanded cooperative program of technical assistance for economic development, to outline methods of financing the program and to suggest ways of coordinating the planning and execution of the program.

Mr. Truman's Fourth Point was made in his inaugural speech Jan. 20 and refers to a bold new program for the economic development of backward areas to be carried out in cooperation with the United Nations.—Ed.

The fact that the United Nations are now officially seized of the Fourth Point does not, in itself, advance its development very much beyond the germ of the idea as it was first suggested by President Truman. True, the American delegates made it clear that there was no question of a new Marshall Plan for all. Mr. Thorp spoke primarily of technical assistance and insisted that the bulk of new investment should be provided by the countries themselves. The full scope of the program has still to be worked out, and it is clearly vital to realize from the outset that the problem it is intended to meet goes far beyond the poverty and backwardness of certain areas in the world. What is at stake is the whole future of capital expansion, rising productivity and international trade.

It is a truism to say that the prosperity of the nineteenth century was based upon the ability of the new industrial nations of western Europe to export capital as well as goods, and upon their willingness to accept goods in return. In the decade before the first world war, the capital investment of Britain, France and Germany abroad rose to an annual average of the equivalent of about $1,500 billion, at the prevailing rate of exchange. This tremendous and continuous fertilization of the world not only directly increased the productivity and raised the standards of such hitherto backward areas as India, southeast Asia, the Argentine pampas and the plains of the Middle West. It had important consequences in the sphere of trade. The raw materials which it helped to develop, grain and meat in the New World, rubber, tin, sugar in the colonies, kept pace with the expansion of industry and maintained a reasonable balance between manufactured goods and primary products—the balance underlying stable terms of trade. Capital development on this scale insured that trade was both many-sided and expanding. Western Europe paid for an increasing percentage of its imports out of income earned on foreign investments, and the raw materials produced in southeast Asia were vital in trading with the expanding United States.

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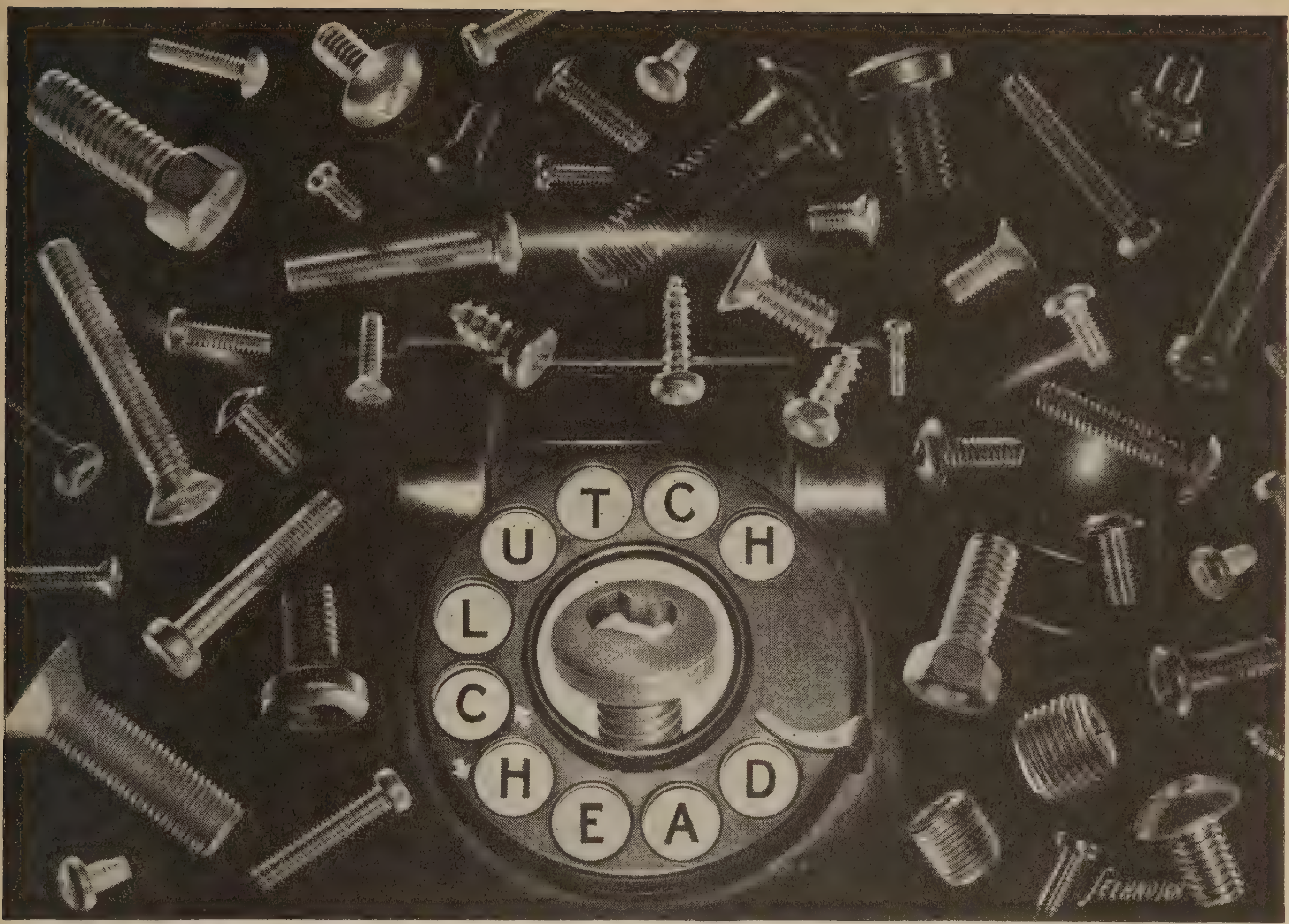
BETWEEN the wars, this whole structure of trade based on steady capital expansion was seriously weakened. Western Europe ceased to be a large exporter of capital. By 1938 all foreign lending had ceased. The United States did not take its place. After a hopeful but inexperienced spurt in the 'twenties, foreign lending fell away. American investment abroad represented $8 billion in 1929, and only $3 billion in 1938. By 1939, the flight of capital to the United States had counterbalanced American lendings in that year and net American investment overseas was nil. The war, by ruining western Europe and immensely increasing its dependence upon the Western Hemisphere, accelerated a sequence of events which was already in train, though not very clearly recognized, long before 1939. The question today is quite simply whether the capital expansion which made possible balanced trade between the nations and rising standards of living throughout the world can be secured in this century as it was so signally in the last.

Implicitly at least, President Truman's Fourth Point recognizes the fact that unless governments take active steps to restore the old wealth-creating flow, it is not likely to come about of itself. On the side both of the creditors and of the debtors, inhibitions impede the export of capital which were absent in the heyday of liberal free trade. On the side of the creditors, the fact must be faced that in the next decade at least only one community will have sufficient surplus wealth to fertilize the outside world and that is the United States. Yet the United States is not a natural investor in the foreign field. The tightness of Britain's island frontiers forced it consistently to invest overseas. In 1909, one-fifth of Britain's capital was invested abroad. In the United States, on the contrary, overseas investment has failed to keep pace with the growth of internal prosperity and the second world war accentuated the process. In 1948, private domestic investment in the United States amounted to nearly $40 billion. Private investment abroad was only $900 million, the bulk of it invested in Latin America and Middle Eastern oil. It is true that, in 1948, the domestic market in the United States was booming.



TYPE "A" ASSEMBLY BIT

COMMON SCREWDRIVER

On Call... ALL STANDARD **CLUTCH HEADS**

On Short Order... "SPECIALS" TO SUIT

Plant expansion, with greatly increased production facilities, has freed us from the bug-a-boo of the back-log.

More than that, it has resulted in the establishment of "banks" at the factories. Thus CLUTCH HEAD Screws, in virtually all standard sizes and types, may be called for with assurance of fast deliveries.

Likewise, with these extended facilities, you can rely on speedy action going behind your requirements for "Specials" to meet your specifications.

As always, CLUTCH HEAD is truly "*On Call*" for the delivery of safety and savings with features that are unequalled by any other screw on the market today.

Start your investigation of America's Most Modern Screw by sending for assortment of screws, sample Type "A" Bit and illustrated brochure

Only in CLUTCH HEAD do you get the dual safety of automatic dead-center entry and non-tapered driving for zero in skid damage . . . plus easier driving with freedom from fatiguing end pressure to buck "ride-out." Only CLUTCH HEAD has the Lock-On to hurdle "fumble spots." Only CLUTCH HEAD has a

CLUTCH HEAD SCREWS

Type "A" Bit rugged enough to drive 214,000 screws non-stop . . . and that can be repeatedly reconditioned on-the-spot in 60 seconds. And CLUTCH HEAD alone simplifies field service with a recess that is basically designed for operation with a common screwdriver.

UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2 **CHICAGO 8** **NEW YORK 7**

It is possible that as the opportunities for new investment are satisfied at home, American investors may become more interested in opportunities abroad.

THE chief problem on the creditor side is therefore to achieve a high and stable flow of American investment. But before the means for achieving such an objective can be discussed, there are difficulties to consider on the side of the debtors. The world has changed unrecognizably since the great days of foreign capital investment. The spirit of nationalism has grown, even among the staidest members of the European community, encouraging everywhere a distrust of foreign capital. Communism has filtered into the western world and is running rampant in the Far East, carrying with it a passionate campaign against dollar imperialism. Many governments are no longer ready to permit private investment in a range of industries and services, and may in future extend the list by further nationalization. If American capital could be provided free or at low rates of interest to governments to do exactly what they wished with it, there would be few obstacles to American investment on the part of the debtors. But there would then be no American capital forthcoming to invest. The real task underlying President Truman's Fourth Point is thus to find ways and means of tempting American capital out into the world each year, on terms which give sufficient inducements to the American lender and sufficient safeguards to the non-American borrower.

Once the very wide scope of the Fourth Point is grasped, it is easy to understand the multiplicity of agencies concerned with it and the difficulty which they all meet in saying what precisely the Fourth Point is designed to do. It concerns the United Nations, with its specialized agencies. It concerns the Economic Cooperation Administration, and Mr. Hoffman has invited Dr. Isaiah Bowman, an authority on undeveloped areas, to head a division devoted to colonial development. It concerns the American Import-Export Bank. It interests American exporters, who have presented their views to the Government through the United States Associates of the International Chamber of Commerce. It affects American industrialists who, through the National Association of Manufacturers have given evidence to the Economic and Social Council, arguing that given proper conditions, the United States should be able to export about 2 billion dollars of capital each year. The danger is that the Fourth Point will be buried in too much interest and too much planning, and that the essential aim, the expansion of American investment, may be lost either in a smother of programs or in the interstices of responsibility between all the agencies concerned. What is needed now is a clear cut line of advance on two or three major fronts.

ONE obvious approach lies through the ECA and concerns an area in which the cooperation of American capital must be possible, if it is to be possible anywhere. The nineteen Marshall countries are not technically backward, yet they have fallen behind in the race and have gone under the harrow of war. At the same time, they offer some of the stability and familiarity which a foreign investor must seek. Hitherto, both on the side of the United States investor and the European recipients, there have been hesitations and some mistrust. The transfer guarantee included in the Foreign Assistance Act last year did not offer American capital sufficient inducement, and in 1948 only $850,000 was taken up out of the $1,000 million earmarked for loans. The European governments on their side have played a passive role where they have not been actually discouraging. A vital first step in securing greater American investment would be a serious attack upon this problem of private investment; the Europeans should state their hesitations and their terms, the Americans the guarantees they seek. Coordination of European capital investment has been adopted by the Organization for European Economic Cooperation in Paris as one of its priorities for discussion. The role of American capital in Europe could be considered at the same time.

Nevertheless, such relatively well developed areas as Western Europe or the English speaking Dominions, do not provide possibilities for investment comparable with those which exist in their dependent territories. It is here, in the undeveloped areas properly so called, that the major line of advance seems to lie. Provided that the technical skill available to the United Nations is strengthened and some workable method of coordination between the various agencies can be established, Uno can play a useful preliminary role. Most backward areas are not in a position to profit by intensive capital development until certain preliminaries have been worked out. The first is to choose between an almost infinite variety of candidates, and the advantage should clearly be given to those territories which can help to meet the world's urgent need for foodstuffs and primary products. It is significant that American capital has gone out spontaneously in search of oil. It will be most easy to attract capital to areas likely to satisfy similar American needs or to relieve the strain of European demands on American supplies. The selection of the projects could be based upon the surveys financed either through the United Nations or through various American agencies. For instance, ECA has just made dollars available for such a study in British Central Africa.

ONCE the selection had been agreed, the groundwork of roads, railways and public utilities could best be provided by governments or by such agencies as the International Bank. The Bank has already shown some interest in such activities which, by creating minimum conditions of stability, tempt the larger private investments to follow. The advantage of entrusting this preliminary investment to international agencies is that it helps to overcome the local governments' distrust of foreign control over the basic services in the community. When these preliminaries are completed, the ground is roughly prepared for private capital.

Little in such a program would be absolutely new. There are already numerous missions scattered through the backward areas, preparing the data upon which judgments can be based. Already Americans on their private initiative have gone out pioneering in the new and more socially responsible type of foreign investment as, for instance, in the Rockefeller experiments in Latin America or such ventures as Overseas Consultants Inc. in Iran. But the drawback is that all initiatives and ventures are too thinly spread to do more than scratch the surface and at no one point do they begin to add up to a bait for really big American investment.

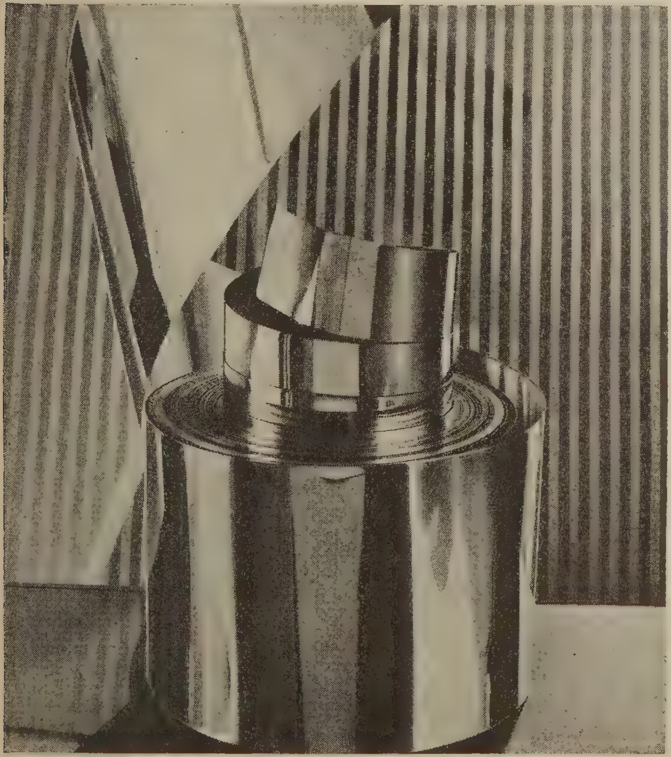
NICKELOID ZINC BASE METALS BEING UTILIZED TO REAL ADVANTAGE

In the choice of base metal for pre-plated parts on consumer products, the manufacturer many times has a tendency to overlook the many advantages of zinc. In purchasing his plated sheets or coils he may first think of steel or aluminum base — or brass and copper.

In cost, zinc base plated sheets or coils occupy a position rather midway between plated steel and, for example, plated copper. Plated zinc is easily worked and thus is adaptable to blanking, forming, stamping and other fabrication methods.

Durability of pre-plated zinc is high. As a base metal it is rust-proof and highly corrosion resistant. With zinc as a base metal for platings, the raw edges or unplated metal back is no objection. The finish is beautiful, mirrorlike, and plated zinc is available in a range of gauges and tempers.

Zinc as a base metal may be procured with finishes of either nickel, chromium, copper or brass. It is available in sheets or long continuous coils, plated one or two sides, bright or satin finish. It is also available in crimps and patterns for unusual effects.



Voss
Tailored Fred
FRENCH MODERNS

Just a few of the hundreds of items manufactured in quantities which employ pre-plated zinc base Nickeloid Metals.

While many metals are short in supply or delivered on an allocation basis thus necessitating anticipation of requirements, sheet or coil zinc is a little easier in supply. Our Peru, Illinois, plant, in addition, is located in the heart of the zinc rolling area where time is saved in delivery. In view of the workability and durable qualties of zinc base metal — it is one of the pre-finished Nickeloid Metals now receiving more than ordinary consideration on the part of manufacturers.

We have just completed a new folder on our pre-plated zinc base metals with finishes of nickel, chromium, copper or brass. Write for it on your company stationery.

AMERICAN NICKELOID CO.

Peru 2, Illinois

MARKET BRIEFS

• **CONVERSION AFTERMATH**—Three creditors last week secured a court order to appoint a trustee for reorganization of Sterling Steel Foundry Co., Braddock, Pa. The foundry is one that was revamped to produce basic openhearth ingots for conversion. The three, Pittsburgh scrap firms, who claim they are owed a total of $133,057, are: Southwest Steel Corp., Duquesne Iron & Steel Co., and M. B. Speer Co. Other big creditors include Max Solomon Co. and Briggs Mfg. Co. Efforts are now being made to sell the plant as a complete steel foundry.

• **TINPLATE INVENTORIES**—Hoping for a price cut which steelmakers can't consider now, a number of tinplate consumers have decided to cut their inventories by as much as 25 pct. They are gambling on uninterrupted production and a possible price cut—neither of which is a sure thing at this time. The effect of their action has been to open up some space on cold reducing sheet mills whose output has until now been exclusively earmarked for tinplate.

• **WAREHOUSE STEEL**—Warehouses in the East report that heavier tonnages of carbon sheets and strip are being made available to them. They say that plates are now in the shortest supply. Consumers report that more sheet and strip is being offered to them by the major producers. So far there have been no increases in offerings by Western producers who have withdrawn from the market.

• **BRITISH BOOST PRICES**—British iron and steel prices were increased by an average of 9 pct on Apr. 1. The action followed withdrawal by the government of various subsidies on ore, scrap and pig iron imports previously borne by the central authority. Iron and steel prices are now 87 pct above prewar compared with 140 pct for general manufactured products.

• **FORD CUTS**—Ford has joined General Motors, Kaiser-Frazer and Willys Overland in announcing a price cut. The decrease ranges from $12 to $120 including $12 to $30 on Ford passenger cars; $80 to $120 on Mercurys, and $100 on Lincolns. Some truck models were reduced from $10 to $40.

• **HARRISBURG PLATES DOWN**—Central Iron & Steel Co. dropped its base price for carbon steel plates on Apr. 1 to $4.95 per 100 lb f.o.b. Harrisburg, Pa. Although the former price had been $6.50, the price for mill accumulations (irregular sized sheets) had been lowered recently.

• **STAINLESS SHEETS**—Warehouses handling stainless steel sheets are concerned with the action taken Mar. 28 by Carnegie-Illinois to permit consumers as well as jobbers to combine order quantities in certain designated sheet sizes to make up the quantity discount. Jobbers fear that other stainless producers will be required to extend the combined order privilege to consumers, an action that could be expected to reduce jobber participation in the sheet market.

• **UNION DEMANDS**—Steelmakers and fabricators with United Steelworkers contracts may get a tip on this summer's union demands from the program to be laid before can companies. American Can and Continental Can will be presented with uniform demands calling for: "(1) A substantial wage increase; (2) social insurance; and (3) pensions and other benefits."

• **NEW OPENHEARTH**—Granite City Steel Co. has approved plans for a $1.5 million openhearth furnace. This will boost annual capacity about 100,000 to 120,000 tons. Present annual capacity is 300,000 tons. Equipment for this, the fourth furnace of its type here, will be obtained from the Rust Furnace Co., Pittsburgh.

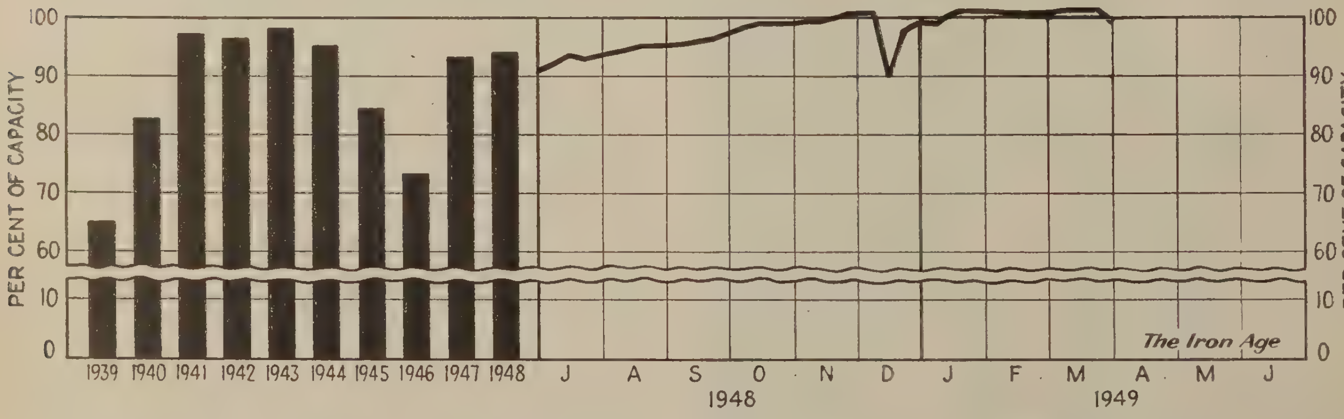
• **PRICE CUTS**—Youngstown Sheet & Tube Co. reduced the price of Yoloy, its high strength low alloy steels, by $4 a ton, effective Apr. 1, to bring them to competitive levels. The company also took $5 a ton off wire rods, setting them at the going price of $3.40 per 100 lb.

• **IRON SOLD TO U. K.**—Lone Star Steel Co. sold 40,000 tons of basic pig iron to the United Kingdom at a price reported to be $50.00 f.o.b. furnace. Sixty thousand tons of pig iron for Japan were bid for this week in Chicago.

• **FOREIGN SHAPES DOWN**—Some small lots of foreign structurals have been offered and sold recently at prices below the domestic price. This development represents a drop of about 50 pct in foreign steel prices in the domestic market.

• **CLAD STEEL REDUCTIONS**—Deductions ranging from ½¢ to 4¢ per lb on heavy gages of stainless clad steel plates have been put into effect by Lukens Steel Co. The deductions apply to plates weighing 4000 lb or more each, and cover gages from ⅝ in. to 1½ in.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
March 29......	102.5*	101.5*	95.0	99.0	107.0	105.0	102.0	94.0	104.0*	102.0	110.0	82.5	105.5	100.5
April 5.........	99.5	99.0	94.5	99.0	102.0	105.0	101.0	94.0	100.5	106.0	110.0	77.5	98.5	99.5

* Revised.

Industrial News Summary

- ***1948 Steel Earnings Up 32 Pct***
- ***Scrap Market Drops $4.34 a Ton***
- ***F.O.B. Setup Beginning to Hurt***

THE 1948 earnings of the nation's steel companies were about 32 pct higher than they were in 1947, according to a financial analysis of steel industry operations prepared by THE IRON AGE. Record sales of $8.5 billion returned net profits of approximately $575 million, or a little less than 7 cents on the sales dollar. Few believe that the industry will be able to duplicate these postwar records in 1949.

Perhaps as proof of this is the fact that steel common stock dividends increased only 7.1 pct last year while surplus funds—set aside for expansion, improvements or rough weather—were boosted by about 24 pct. The study also shows that the postwar expansion of the industry is expensive: Invested capital in the industry today is about a billion dollars higher than it was 2 years ago. Incidentally, federal income taxes amounted to $6.24 on the average ton of finished steel sold last year.

The scrap market this week continued its falling apart. There was no sign yet that rock bottom had been reached. Buyers were still noticeable by their absence from the market. One of the sharpest drops on record took place this week. Heavy melting grades were down an average of $6.00 a ton at Pittsburgh, $5.00 a ton at Philadelphia and $4.00 a ton at Chicago. THE IRON AGE steel scrap composite dropped $5.00 a gross ton with the index reaching $26.17 a gross ton. This is the lowest level since the second week in December, 1946. The scrap composite has dropped $16.83 since the first week in January.

Steel users this week were breathing hard on steel salesmen trying to argue why steel prices should be lower. Their exhortations were falling on deaf ears. Steel people point out that regular mill prices were a far cry from what gray marketeers charged or what it costs via the conversion method of buying steel. They also point out that steel prices went up a whole lot less than other prices.

AND to cap their arguments they say that until coal mining costs and steel costs, with probable increases due to social security demands, are determined there isn't a ghost of a chance of any change in base steel prices. At least that's the viewpoint of steel people. The consumers, however, will keep up their pressure hoping that their own costs can be alleviated by lower material costs.

Steel customers in the past six months already have received lower steel prices by (1) end of the gray market which ran as much as $100 to $200 above mill prices, (2) end of conversion deals which cost from $50 to $150 more than mill price, (3) end of premium prices which ran from $10 to $30 more than regular mill prices and (4) getting steel closer to home which meant less freight to be paid by the user. A combination of these reasons had supported some of the price cuts made by manufacturers.

Pretty soon the f.o.b. method of selling steel will slap hard at steelmaker and steel user. So hard that it will be the prime topic of conversation. Midwestern steel firms are trying to sell their wares in Chicago and other remote districts this week. Because steel is still a little hard to get for some customers they may take the long shipments and pay the extra freight.

But when Chicago area mills catch up—as they will soon—they will supply all customer requirements in their own area. Steel from remote centers will be turned down because of high freight paid by the consumer under f.o.b. selling practices. This means that Pittsburgh and Ohio Valley areas will be making more steel than they can sell around home. If they can't absorb freight and remain competitive they will have to cut back operations. It can be expected that these cutbacks will not be far away at the rate some steel consumers are reducing inventories in lieu of placing large steel orders.

THE period when f.o.b. will make backyard selling the main prop in the steel market is coming closer. And the yelling and hollering by steelmaker and consumer alike is also just that close. Already hot-rolled bars, some structural shapes, sheets, strip, pig iron and all types of alloy steel are being offered by steel firms in areas where they haven't been for a long time.

Under the present setup in the steel industry there is little that can be done to prevent this concentration of steel sales close to mill centers. Where the mill centers make enough for surrounding territory all will be well. But where the steelmaking areas produce far more than is consumed in their locality the picture will be dark if the steel demand slides—as some expect it to in the next few months.

The steel ingot rate this week is off one point to 99.5 pct of rated capacity. There was no sign this week that the steel ingot rate was slated for a deep drop in the near future. It was still the consensus that steelmakers would roll out as much steel as possible until at least midyear. At that time the coal and steel labor situation might play the part in dictating how much or how little steel is to be turned out.

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Industrial Expansion In Texas Showing Signs of Leveling Off

But There Is Still a Demand For Special Steel Items, Weak Gray Market

By D. I. BROWN
Chicago Regional Editor

Houston

• • • **Steel markets** in Texas since the war have been abnormal due to the terrific industrial and commercial expansion. Tonnages shipped into Texas, have in the case of certain products, tripled prewar shipments. Last year, Texas industrialists told THE IRON AGE, probably will go down in history as the high water mark of Texas expansion. From here on the general building and expansion programs will gradually decrease and then steel demand will eventually level off at a rate necessary to supply and sustain the major staples of Texas: oil, gas, sulfur, cotton, cattle, and the chemical industry. Texas received roughly 3.5 pct of all finished steel shipped in 1940. Last year they received about 5 pct. Somewhere between these two figures, it is believed, will be the normal market for the state in the next few years.

Texans have no intention of jeopardizing the huge industrial progress made in post-war years by blindly overexpanding. Right now they show a caution and conservatism which was not apparent 6 months or a year ago. Part of this attitude reflects the general business attitudes now prevalent everywhere. A bigger part of it is due to the fact that basically Texans lay their plans on what happens to Texas, irrespective of conditions in the outlying areas.

Today every Texan is watching the oil industry. It is shaky. Supplies are adequate and crude production or allowables for the industry have been cut by the Texas R. R. Commission for 4 consecutive months. Cuts in production started last year, but in January 250,000 bbl per day were lopped off. In February the commission cut another 66,000 bbl, in March 200,083 bbl, and the April cut will be 234,211 bbl per day. Total allowables for April are set at 1,994,360 bbls per day so the oil industry is still far from being in a slump.

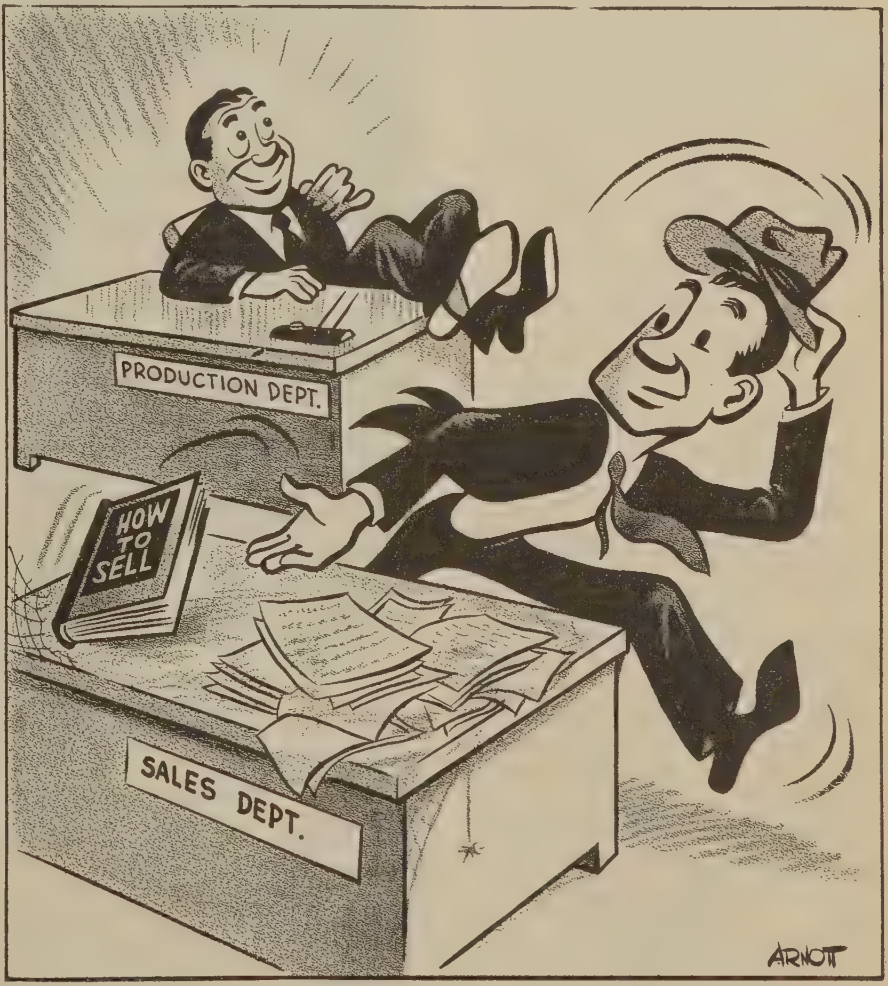
However, the crux of the oil situation depends on price. Although the Texas R. R. Commission's function is one of conservation of national resources, they automatically control price for the simple reason that they regulate supply and demand. So far the cut in production has staved off a price decline, but how much longer the present price can be held is highly questionable.

Should the price fall it will affect the drilling program. Steel pipe for oil or gas wells is one of the few steel products still in short supply in Texas. This includes casing, drill pipe and line pipe. Should the price fall, steel pipe supplies, except large diameter line pipe, will quickly become normal. Last year the oil industry drilled about 135 million ft. This year they estimate they will drill 140 million ft, but this program can decline very quickly. One large driller in the Dallas area shut down 100 of the 300 drilling rigs he operates a few weeks ago.

Last year the oil industry yelled long and loud for more steel, particularly pipe. They are not yelling so hard now. In fact, one oil executive told THE IRON AGE that they are glad they didn't get all the steel they wanted, as if they had they

(CONTINUED ON PAGE 147)

Time's a'wastin'


PRODUCTION DEPT.
HOW TO SELL
SALES DEPT.
ARNOTT

Government Revokes Allocation Order For Control of Antimony

Washington

• • • **Allocation Order** M-112 which controlled receipts and inventories of primary antimony has been revoked by the Dept. of Commerce.

Issued originally by the WPB, in recent years the order has not contained use restrictions but served merely to control distribution through restriction of inventories. Future supplies are seen as adequate enough to make even this restriction unnecessary.

New supplies in 1948 rose 3500 tons to a total of 23,909 tons, of which domestic mine production amounted to 6693 tons. Imports totaled 13,545 tons of ore, 3311 tons of metal, and 360 tons of needle.

Consumption amounted to 17,112 tons and exports, 839 tons. Both represent reductions over 1947.

Total stocks at the year's end amounted to 13,523 tons, virtually unchanged since the end of 1947. Of this amount, private holdings had increased to 9413 tons while the amount held by RFC had dropped to 4110 tons. The latter tonnage is exclusive of stockpile holdings.

Reports Indicate Rise In Automotive Output

Detroit

• • • There are indications that the output of cars and trucks from U. S. and Canadian plants may climb as much as 20 pct during the second quarter, according to informed sources here.

Ward's Automotive Reports placed the combined U. S. and Canadian output for the week ended Mar. 27 at 107,284. Of this number, 74,326 were passenger cars and 32,958 are trucks, Ward said.

Auto production at the Chrysler Divisions, General Motors, Ford and Studebaker are expected to climb substantially during the period, Ward's indicated. It is expected that the Chrysler increase will be substantial. At the present time Chrysler output has been hit by a strike at Midland Steel Products Co. Midland supplies frames for several Chrysler lines.

Changes Agency For Voluntary Allocation Of Steel Products

Washington

• • • **Secretary of Commerce** Charles Sawyer has announced that effective Apr. 15, the Office of Defense Transportation will be relieved of the responsibility of administering the voluntary plans providing steel products for the freight car and barge programs.

Administration of the plans will be carried on by the Office of Industry Cooperation, Dept. of Commerce.

"ODT has requested that it be relieved of the responsibility of administering the plans because its Div. of Manpower and Materials is being liquidated," Mr. Sawyer said.

SUGGESTION WORTH $3950: *An employee suggestion award totalling $3950, the largest yet made to an individual worker of Sylvania Electric Products, Inc. has been presented to Rufus Schager of Emporium, Pa., according to J. C. Farley, general manager. Schager's idea won the top award because it has materially reduced shrinkage in radio tube production, has increased production and shortened time required for a basic small parts operation.*

Zinc Price Reflected In Lower Quotations For Galvanized Pipe

New York

• • • **Reflecting reduction** in price of zinc, U. S. Steel Export Co., U. S. Steel subsidiary, has announced the accompanying new prices with freight included to New York, Philadelphia or Baltimore.

These prices will apply on carload lots and are effective with shipments made from the mills on and after 12:01 A. M. Mar. 24, 1949. Prices are subject to seller's current list of extras and deductions and conditions of sale. All prices are subject to seller's prices in effect at time of shipment.

American Standard Pipe, T. & C.	
Buttweld 2½" and 3" Galvanized	21.6%
Seamless, 3½" to 6" Galvanized	14.1%
English Gas Tubes, T. & C.	
Buttweld, 2½" and 3" Galvanized	23.5%

Sells Canadian Plant

Boston

• • • **Delamore and Williams** Ltd. of West Toronto, Canada has sold its business, including real estate, plant and equipment to Delamore and Williams Co., Ltd., a wholly subsidiary of Pneumatic Scale Corp., Ltd. of Quincy, Mass. This Canadian plant will continue to be under the direction of Victor G. Williams as president and general manager. Kendall D. Doble, president of Pneumatic Scale Corp., Ltd. will serve as chairman of the board of the new Canadian subsidiary.

Recalls Railroad Workers

Buffalo

• • • **More than** 1000 railroad workers in the area who were furloughed during the coal miners' holiday were recently recalled.

The New York Central resumed operation of its East Buffalo car repair shops with 650 workers and 100 operational employees also were recalled. The Baltimore & Ohio and Pennsylvania Railroad called back approximately 300.

Lists 236 Industrial Reserve Plants Valued at $2.3 Billion

Washington

• • • **War production** facilities worth $2.3 billion and comprised of 236 plants or portions of plants constitute the NIPR (National Industrial Plant Reserve) as of Mar. 1, according to the Munitions Board.

These are either in actual possession of the government in standby status, under control of the military establishment, or are in private operation under sales or leases subject to the NSC (National Security Clause).

THE IRON AGE *listing of the National Industrial Plant Reserve includes only those plants closely associated with the metal working industry.—Ed.*

About 50 pct of the facilities are accounted for by three groupings—aircraft and components, explosives and ammunition loading, and shipbuilding. The reason for concentration on these three is twofold. One is their importance to war production; the other is that if disposed of without restriction, they probably would have been so completely converted to other manufactures that rapid emergency reconversion would be out of the question.

A somewhat similar situation exists with nonferrous facilities which consist largely of primary aluminum and magnesium plants built for war purposes. If unrestricted disposal had been permitted, easing of current shortages might result in reduction of capacity past the safety margin considered necessary for mobilization.

Of the total now in the NIR, 96 facilities valued at $772 million have been sold and 45 valued at $485 million have been leased to private operators. These plants or strategic portions thereof are subject to the security clause which permits recapture by the government within periods ranging up to 120 days. An additional five facilities have been transferred to various federal agencies. These disposals account for well over half the total.

Another 22 facilities worth $469 million but which are unsuitable for sale or lease have been transferred to the custody of the FWA (Federal Works Agency) for protection and maintenance. Four other plants are technically under the FWA although three are included in the Navy reserve and the fourth is under private operation and subject to the NSC.

The remainder of the reserve consists of 48 facilities valued at $325 million which are included in inventories of the disposal agency and the military departments. There are 17 plants valued at $162 million classified as nonsurplus. They are still in production on government contracts.

In addition, the Navy has requested the Board to include 26 additional plants to the NIPR. These include varied production facilities such as stainless steel and alloys (Armco, Baltimore), anchors and chains (Baldt Anchor Chain & Forge Co., Chester), optical equipment (Bausch & Lomb Optical Co., Rochester), diesel engines (Cooper Bessemer Corp., Grove City, Pa.), aircraft components, radio equipment, and so on.

Navy has also asked that eight more plants or facilities which are not now included in the NIPR be transferred. These include aircraft, armor plate, marine engine, and related parts manufacturing plants located in Baltimore, Wilmington, Bethlehem, Buffalo, Norfolk, Mobile, Oakland and San Francisco.

Original cost of these NIPR facilities amounted to about $3.4 billion. However, only a very few were transferred to the reserve in toto. Portions of many were not necessary for the reserve, parts of others had been sold prior to legislation setting up the reserve, and some machinery and equipment had been sold or considered unnecessary for the reserve. These factors reduce the present value of the reserve to $2.3 billion.

Generally, the NSC is accepted to mean that the government can recapture the facilities. Actually, the security provision goes much farther. It also requires the purchaser or lessee to maintain plant structures in good condition up to as much as 20 years, and reserve equipment for as much as 10 years. Failure to carry out these provisions could result, in extreme cases, in the government taking over and restoring the premises and equipment.

Of equal importance with the plant reserve is the portion of Public Law 883 which authorizes the NIER (National Industrial Equipment Reserve). This provides (exclusive of JANMAT) for the setting aside or earmarking of machine tools and other production equipment which could be utilized for mobilization.

In its Feb. 1 inventory report, WAA indicated that in addition to 29 plants already certified as such, another 52 plants subject to the NSC would probably end up in this category. About 45 of the latter will probably be certified as unsaleable and unleased during 1949 and the remainder during 1950.

The Munitions Board report to the Congress contains the full reports of the National Industrial Reserve Review Committee which was set up to obtain the advice and assistance of industry in carrying out this program.

Among its many recommendations the committee urges the Board to take immediate steps to prevent further deterioration and to have available at all times work and cost estimates required to place the plants in extended standby condition, as well as condition to operate. The committee also suggests that the National Security Clause be liberalized so that industry will absorb excess plants more readily.

Please turn page for listing of plants in National Industrial Reserve.

FACILITY	SPONSOR IN NIR	PRODUCT	STATUS
Adirondack Foundry and Steel Company Watervliet, N. Y. $1,832,000 *	Army	Gun Forgings	Sold March 1948 to Adirondack, subject to NSC, modified to require maintenance of capacity for five years.
Air Reduction Sales Co., Inc. Gloucester, N. J. $88,000	Air Force	Oxygen	Surplus. Under interim lease to Air Reduction Sales Co.
Alabama Drydock & Shipbuilding Company Mobile, Alabama $14,643,000	Navy	Tankers	Sold January 1949 by WAA to Contractor, subject to modified NSC applied only to Fabricating Shop, Warehouses #1 and #2 (excl. Machinery and Equipment); 75-ton Gantry Crane on Pier "L"; and 72 acres of land (excl. of all improvements) known as Turner Tract. Restrictions removed 28 January 1949 from remainder of surplus facility.
Alabama Drydock & Shipbuilding Co. Mobile, Alabama $3,813,000	Navy	Tankers	Nonsurplus; held by Navy
Aluminum Company of America (Alumina Plant only) Baton Rouge, La. $26,450,000	Air Force	Alumina	Alumina plant leased to Permanente Metals Corp. through June 1963, subject to NSC restrictions with renewal options extending to June1973. Rotary kiln and equipment sold July 1948 to Lone Star Steel Co. and right-of-way sold to New Orleans, Texas & Mexico RR without NSC
Aluminum Company of America Burlington, New Jersey $12,500,000	Air Force	Aluminum	In WAA inventory. Plant available for sale or lease with NSC on entire plant, except carbon facilities. Building 40 sold prior to application of NSC.
Aluminum Company of America Chicago (McCook) Ill. $44,134,000	Navy	Aluminum	Leased through May 1963, subject to NSC to Reynolds Metals, with option to purchase. Right-of-way sold to Public Service Co. and water supply line sold to Village of McCook prior to application to NSC.
Aluminum Company of America Glassmere, Pa. $1,065,000	Navy	Aluminum powder	Sold September 1948 to Ivor S. McFarlane Co., subject to NSC.
Aluminum Company of America Hurricane Creek, Ark. $15,758,000	Air Force	Alumina	Leased through April 1963 to Reynolds Metals, subject to NSC and option to purchase. NSC to be modified to permit moving plant in event raw materials are no longer available at present site.
Aluminum Company of America Jones Mills, Arkansas $29,258,000	Air Force	Aluminum	Major portion (all except two pot lines) leased to May 1963, subject to NSC restrictions to Reynolds Metals Company, with option to purchase entire Plancor. NSC to be modified to permit moving plant in the event raw materials are no longer available at present site.
Aluminum Company of America Kansas City, Mo. $4,984,000	Navy	Aluminum cylinder heads for aircraft engines	Leased to Vendo Company to April 1956, with option to purchase extending to October 1950.
Aluminum Company of America Massena, N.Y. $8,175,000	Air Force	Aluminum	Sold to Aluminum Co. of America in October 1948 subject to NSC
Aluminum Company of America Maspeth (Newton Creek) L. I., N. Y. $32,800,000	Navy	Aluminum	Leased to Navy for use as extension to Brooklyn Navy Yard through June 1949. Navy is sponsoring legislation for transfer to Department of Navy without reimbursement. Vacant land sold to George Jacobs in Novembe 1945, prior to applicati of NSC.
Aluminum Company of America Newark (Heath) Ohio $10,690,000	Air Force	Aluminum blooms, rods and bars	Leased to Permanente Metals Corp. to Septembe 1958, subject to NSC, wit fifteen year renewal option and option to purchase.
Aluminum Company of America Phoenix, Arizona $16,003,000	Air Force	Aluminum	Leased through December 1951 to Reynolds Metals Company with option to purchase.
Aluminum Company of America Riverbank, Calif. $5,159,000	Air Force	Aluminum	Transferred to FWA
Aluminum Company of America Spokane, Washington $11,492,000	Air Force	Aluminum	Leased to Permanente Metals Corporation to July 1963, subject to NSC restrictions, with renewal options extendin to July 1973, and option to purchase. NSC to be modified to permit movin plant in the event raw materials are no longer available at present site.
Aluminum Company of America Trentwood, Washington $40,730,000	Navy	Alumina	Leased to Permanente Metal Corporation to June 1963, subject to NSC, with renew options through June 1973, and option to purchase.
Aluminum Company of America Troutdale, Oregon $7,810,000	Air Force	Aluminum	Leased to Reynolds Metals Company to November 1963, subject to NSC restriction with option to purchase. N modified to permit moving plant in the event raw materials are no longer available at present site. NSC removed 9 February 194 from 22.56 acres of land a to surplus warehouses to permit transfer to Departm of Army.
Aluminum Forgings, Inc. Erie, Penna. $5,094,000	Air Force	Aluminum Forgings	Transferred to FWA.
Amco Magnesium Corporation Wingdale, N. Y. $4,591,000	Air Force	Magnesium	Dolomite Quarry and Tramway sold to D. H. Litter, Inc., subject to modified NSC. Remainder transferre to FWA.
American Steel Foundries Co. Indiana Harbor, Ind. $28,000,000	Army	Armor steel castings - tank parts	Surplus
American Tool Works Company Cincinnati, Ohio $1,816,000	Navy	Machine tools	Sold February 1948 to American Tool Works Co., subject to NSC.
American Zinc Co. of Ill. Dumas, Texas $900,000	Army	Zinc	Non-surplus. Leased to American Zinc Co. to 1951 by RFC
Anaconda Copper Mining Co. (Benbow Group Chrome Mines) Columbus, Montana $3,822,000	Army	Chrome	Certain structures sold fo removal prior to application of NSC. Remainder to be transferred to FWA by 1 July 1949.

* All plant valuations represent original cost to the government of the portion now in reserve.

FACILITY	SPONSOR IN NIR	PRODUCT	STATUS
erican Zinc Co. onsanto & Fairmount ity, Illinois 5,325,000	Army	Zinc	Non-surplus. Modified NSC to be applied to require maintenance of capacity only and permit re-erection or duplication on another site within the continental limits of the United States. Leased to American Zinc Co. to 1951 by RFC.
naconda Copper Mining Co. Mouat Group Chrome ines) olumbus, Montana 8,359,000	Army	Chrome	Certain structures sold for removal prior to application of NSC. Two warehouses transferred October 1948 to Department of Interior under Public Law 841, 80th Congress. Remainder to be transferred to FWA by 1 July 1949.
ssociated Shipbuilders Puget Sound Bridge & redging Co.) eattle, Washington 2,221,000	Navy	Seaplane tenders and mine sweepers	Surplus. Portion under interim lease to Puget Sound Bridge & Dredging Co. to April 1949, subject to NSC with lessee obligated to maintain entire facility.
tlantic Steel Castings Co. rum Lynne, Penna. 486,000	Air Force	Steel Castings	Surplus. Under interim lease to Zimara Enterprises.
viation Corporation Republic Aircraft roducts Div.) etroit, Michigan 494,000	Air Force	Aircraft Engine Parts	Sold October 1948 to Federal Motor Truck Co. subject to NSC.
arium Steel Corporation anton (Lorain) Ohio 731,000	Navy	Steel	Sold to Barium Steel Corp. July 1948 subjectto NSC.
arnes Company, W. F. John ockford, Illinois 1,598,000	Navy	Machine Tools	Surplus. Under interim lease to Barnes Co.
ath Iron Works ath, Maine 2,987,000	Navy	Ship construction and repair	Sold to Bath Iron Works subject to NSC 1 July 1948.
echtel-McCone- ersons Modification Center o. 14) irmingham, Alabama 15,241,000	Air Force	Airplane Modification Center	Sold August 1948 toCity of Birmingham as airport property under Public Law 289, subject to modified NSC.
Bendix Aviation Corporation (Plants 4 and 5) South Bend, Indiana $12,875,000	Navy	Gun turrets, starters, generators and instruments for aircraft	Sold August 1948 to Bendix Aviation Corporation, subject to NSC.
endix Aviation Corp. (Plants 12 and 19) outh Bend, Indiana $615,000	Navy	Gun turrets for airplanes	Sold August 1948 to Bendix Aviation Corp., subject to NSC.
endix Aviation Corp. eterboro, N. J. $1,218,000	Navy	Magnesium castings	Leased to Bendix Aviation Corp. through December 1949, with purchase option.
ethlehem Steel Co. . Lehigh and ethlehem, Penna. $19,507,000	Navy	Armor Plate	Sold March 1947 by Navy to Bethlehem Steel Co. with modified NSC.
Bison Castings, Inc. Buffalo, N. Y. $276,000	Navy	Electric steel castings	Sold November 1948 to Bison Castings, Inc., subject to NSC.
Boeing Aircraft Corp. Renton, Wash. Plancor 156 $11,980,000	Air Force	Aircraft Assembly	Surplus. Portion leased to multiple tenancy project; portions under interim lease. NSC to be applied to land, buildings, and non-severable equipment upon expiration of existing leases.
Bohn Aluminum & Brass Corp. Adrian, Mich. $6,563,000	Air Force	Extruded aluminum alloys (shapes, tubes, etc.)	Leased to December 1951 to Kaiser-Frazer Sales Corp., subject to NSC, with renewal option to December 1956, and purchase option.
Bohn Aluminum & Brass Corp. Los Angeles (Torrance), Calif. $8,219,000	Air Force	Extruded aluminum alloys (shapes, tubes, etc.)	Sold by WAA to Harvey Machine Co. on 8 Oct. 1948, subject to NSC. NSC removed from air-conditioning and circulating system February 1949.
Boston Naval Shipyard Annex Chelsea, Mass. $1,513,000	Navy	Vessels	Surplus.
Bridgeport Brass Co. Indianapolis, Ind. $17,200,000	Army	Brass cartridge cases	Sold February 1947 to Bridgeport Brass Co., subject to modified NSC.
Brown Shipbuilding Co. Houston, Texas $9,002,000	Navy	Naval vessels	Sold to Brown Shipbuilding Co. 1 May 1948, by Navy Department, subject to NSC.
Brush Beryllium Co. Loraine, Ohio $962,000	Navy	Beryllium	Surplus. Plant partially destroyed by fire. Modified NSC to be applied to require maintenance of capacity only and to permit removal to a new site.
Budd Manufacturing Co., Edward G. Philadelphia (Bustleton) Pa. $22,493,000	Navy	Troop-sleepers	Manufacturing area sold to Budd Manfacturing Co. in October 1948, subject to NSC. Airfield portion surplus.
Canton Drop Forging & Mfg. Co. Canton, Ohio $1,489,000	Air Force	Drop hammer capacity for steel forgings	Leased through June 1951 to Canton Drop Forging and Mfg. Co., subject to NSC, with purchase option.
Castle Dome Copper Co. Miami, Arizona $14,767,000	Army	Refined copper	Non-surplus (Held by RFC.)
Champion Machine & Forging Co. Cleveland, Ohio $1,038,000	Air Force	Drop hammer capacity for steel forgings	Surplus. Under interim lease to Cleveland Pneumatic Tool Co.
Chapman Valve Mfg. Co. Springfield (Indian Orchard) Mass. $2,984,000	Navy	Valves	Sold September 1947 to Chapman Valve Mfg. Co. subject to modified NSC.
Charleston Shipbuilding & Drydock Co. Charleston, S. C. $3,434,000	Navy	Tugs	Leased to Charleston Shipbuilding & Drydock Co. with purchase option.
Chicago Bridge & Iron Co. Senaca, Illinois $4,107,000	Navy	Tank landing craft	Transferred to FWA.
Chrysler Corporation (Dodge-Chrysler Plant) Chicago, Ill. $67,727,000	Air Force	Aircraft engines	Leased to Tucker Corp. to October 1957 with option to purchase. If purchase option not exercised, NSC to be applied on land, buildings, and non-severable equipment at expiration of existing lease.
Columbia Aircraft Corp. (Aircraft Service Corp.) Valley Stream, L.I., N.Y. $1,320,000	Navy	Aircraft and parts	Leased to East Coast Aeronautics, Inc., through December 1953, subject to NSC.
Columbia Broadcasting Co. Delano, Calif. $345,000	Navy	Transmitter shortwave	Non-surplus. Under interim lease to CBS (Held by RFC.)
Columbian Bronze Corporation Freeport, L.I., N.Y. $330,000	Navy	Propellers	Sold March 1948 to Columbian Bronze Corp. subject to NSC.

FACILITY	SPONSOR IN NIR	PRODUCT	STATUS
Columbia Metals Corp. Salem, Oregon $6,106,000	Army	Aluminum extrusions	Surplus. Under interim lease to Columbia Metals Corporation, subject to NSC, applied to ammonium sulphate facilities only.
Columbia Steel Co. Pittsburg, Calif. $8,500,000	Army	Steel castings	Surplus. Two open-hearth furnaces under interim lease to Pacific States Steel Corp. NSC to be applied with modified Article 10.
Consolidated Steel Corp. (formerly Western Pipe and Steel Co.) Orange, Texas $8,828,000	Navy	Ships	Surplus
Consolidated Steel Corp. (formerly Western Pipe & Steel Co.) San Pedro (Los Angeles) Calif. $6,093,000	Navy	Ships and small craft	Surplus
Consolidated Vultee Aircraft Corp. New Orleans, La. $8,499,000	Navy	Aircraft	Sold October 1948 to American Radiator Co., subject to modified NSC.
Continental Aviation and Engineering Corp. Muskegon, Michigan $5,273,000	Air Force	Aircraft engines	Surplus. Portions under interim lease; portions in use for WAA warehouse purposes. NSC to be applied on land, buildings and non-severable equipment.
Continental Foundry and Machine Co. Coraopolis, Penna. $2,633,000	Army	Cast armor for tanks	Transferred to FWA.
Continental Foundry and Machine Co., East Chicago, Indiana $5,981,000	Army	Cast armor for tanks	Surplus
Copperweld Steel Co.. Warren, Ohio $9,608,000	Navy	Steel ingots and plates	Surplus. Under interim lease to Copperweld Steel Co.
Copperweld Steel Co. Warren, Ohio $636,000	Navy	Heat treatment of steel	Surplus. Under interim lease to Copperweld Steel Co.
Copperweld Steel Co. Warren, Ohio $1,815,000	Navy	Machine turned steel	Surplus. Under interim lease to Copperweld Steel Co.
Copperweld Steel Co. Warren, Ohio $7,011,000	Navy	Pig iron & steel billets	Surplus. Under interim lease to Copperweld Steel Co.
Cornhusker Ordnance Works Grand Island, Neb. $22,818,000	Army	Ammunition loading	Non-surplus. NSC to be applied to entire installation (Held by Army.)
Curtiss-Wright Corp. Kenmore, N. Y. $3,552,000	Air Force	Aircraft	Surplus. Used by WAA for warehouse purposes.
Curtiss-Wright Corp. Louisville, Kentucky $13,944,000	Navy	Airframes	Sold March 1946 to International Harvester Co. under modified NSC.
Delta Shipbuilding Co. New Orleans, Louisiana $12,849,000	Navy	Ships	Surplus. Portions leased to Shelby Construction Co. to November 1950 and to M.S. Kaplan Co. to April 1949; portions under interim lease.
Diamond Magnesium Corp. Painesville, Ohio $8,241,000	Air Force	Magnesium	Transferred to FWA.
Domestic Manganese and Development Co. Butte, Montana $297,000	Navy	Manganese carbonate ores	Surplus. Under interim leas to Domestic Manganese and Development Co.
Douglas Aircraft Corp. El Segundo, Calif. $981,000	Navy	Aircraft	Transferred to FWA
Dow Chemical Company Bay City, Michigan $1,773,000	Navy	Magnesium sand castings	Surplus
Dow Chemical Company Freeport, Texas $8,230,000	Air Force	Magnesium	Lime and power facilities sold to Dow Chemical Co. subject to modified NSC, October 1946. Magnesium facilities transferred to FWA 13 October 1948 under Public Law 883, 80th Congres and sold by FWA to Dow Chemical Co. February 1949, subject to NSC.
Dow Magnesium Corp. Velasco, Texas $56,363,000	Air Force	Magnesium	Chlorine, lime and power facilities sold to Dow Chemical Co., subject to modified NSC December 1946. Magnesium facilities transferred FWA.
Dravo Corporation Wilmington, Del. $14,554,000	Navy	Landing craft	Non-surplus. Parts leased by Navy. Disposal of remainder to contractor being effected by Navy.
DuPont de Nemours & Co. Leominster, Mass. $771,000	Navy	Chemicals	Surplus
Eaton Manufacturing Co. Saginaw, Michigan $4,803,000	Navy	Aircraft engine parts	Sold to Eaton Mfg. Co. in Oct. 1948, subject to NSC. Portion sold to Eaton Mfg. Co. prior to application of NSC
Eaton Manufacturing Co. Cleveland, Ohio $7,753,000	Navy	Crank shafts for aircraft engines	Sold to Gabriel Corp. in September 1948, subject to NSC.
Electro-Metallurgical Co. Spokane, Wash. $8,938,000	Air Force	Magnesium	Leased through October 1953 (except quarry) to Chromium Mining and Smelting Corp. (for Ferro-Alloys) and Pond Oreille Mining Co.(for Zinc) subject to NSC.
Emerson Electric Mfg. Co. St.Louis, Missouri $6,057,000	Air Force	Gun turrets (aircraft)	Major portion leased to March 1951 to Emerson Electri Mfg. Co. with option to purchase. Remainder under interi lease to Emerson Electric Mfg. Co.
Extruded Metals, Inc. Grand Rapids, Mich. $2,776,000	Army	Aluminum fabrication	Leased to May 1951 to Reynold Metals Company with two year renewal option and option to purchase. If purchase option not exercised, NSC to be appl upon termination of present lease.
Fairbanks-Morse Co. Beloit, Wisconsin $8,148,000	Navy	Marine Diesel engines	Sold 1 August 1947 to Fairbank Morse Co. subject to NSC.
Fairbanks-Morse Co. Freeport, Ill $1,561,000	Navy	Marine Diesel engines	Sold 1 October 1947 to Fairbanks-Morse Co. subject to NSC.
Farrell-Birmingham Co. Buffalo, N. Y. $2,069,000	Navy	Gear generators and rotating elements	Surplus. Major items of pr duction equipment removed Department of Navy or sold to Farrell-Birmingham Co. NSC to be applied on balan of facility.
Frontier Bronze Co. Niagara Falls, N.Y. $155,000	Navy	Aluminum alloy (sand cast)	Sold in September 1947 by Department of Navy subject NSC.

FACILITY	SPONSOR IN NIR	PRODUCT	STATUS
Fairchild Engine and Airplane Corp. (Ranger Aircraft Div.) Farmingdale, N. Y. $6,137,000	Navy	Aircraft engines and parts	Surplus.
Ford Motor Co. Willow Run, Mich. $58,870,000	Air Force	Bombers and sub-assemblies	Water and sewerage disposal facilities sold to City of Ypsilanti. Thirteen temporary buildings, heating equipment and railroad trackage sold to Kaiser-Fraser without NSC. Remainder sold December 1948 to Kaiser-Fraser Corp. subject to NSC on land, buildings and non-severable equipment.
Gary Armor Plate Plant Gary, Indiana $21,736,000	Army	Armor plate	Transferred to FWA.
General American Transportation Corp. (Jacksonville Oil Terminal) Jacksonville, Florida $4,043,000	Navy	Oil pipeline	Surplus. Under revocable lease to Navy pending acquisition by Department of Navy.
General Electric Co. Kokomo, Indiana $2,943,000	Navy	D C generators for DE's	Surplus. Under interim lease to General Electric.
General Engineering and Drydock Co. San Francisco, Calif. $802,000	Navy	Ship repair	Non-surplus. Disposal to General Engineering being effected by Navy.
General Machinery Corp. Hamilton, Ohio $3,978,000	Navy	Marine engines	Sold by Navy Department in September 1948 to Lima Hamilton Corp. (successor to General Machinery) with NSC.
General Metals Corp. Oakland, Calif. $1,989,000	Navy	Steel Castings	Sold October 1948 to General Metals Corporation with NSC
General Motors Corp. (Cleveland Div.) Cleveland, Ohio $8,192,000	Navy	Ship propulsion equipment (Diesels)	Sold to General Motors Corp. by Navy, April 1948, with NSC.
General Motors Corp. (Fisher Body Div.) Grand Blanc (Flint) Michigan 25,000,000	Army	Tank and gun motor carriages	Major portion leased through March 1951 to General Motors with five-year renewal option and option to purchase entire plancor (including unleased vacant land) subject to NSC on land, buildings and building installations.
General Motors Corp. Kings Mills, Ohio $4,657,000	Navy	Starting motors & generators for marine engines	Leased to Electric Auto Lite Co. to January 1951, with purchase option.
eneral Motors Corp. Chevrolet Div.) aginaw, Mich 2,325,000	Air Force	Aluminum forgings	Leased to October 1952 to General Motors. NSC to be applied to entire plant upon expiration of existing lease.
eneral Motors Corp. Chevrolet Division) lant No. 1 onawanda, New York 8,784,000	Air Force	Aircraft engines	Sold to Playboy Motor Co. January 1948, subject to NSC on land and buildings only.
obe Aircraft Corp. rt Worth, Texas 538,000	Navy	Aircraft	Portion surplus. Portion occupied under interim use permit by U.S. Treasury Department for warehousing purposes. Airport portion, non-surplus.
Hurley Marine Works, nc. akland, California ,996.000	Navy	Ship repair	Sold by Navy to City of Oakland, California, with modified NSC.
yde Windlass Company ath, Maine 734,000	Navy	Deck machinery	Sold August 1947 to Hyde Windlass Company, subject to modified NSC.
Heppenstall-Eddystone Corporation Eddystone, Penna $7,182,000	Navy	Heavy forgings and die blocks	Major portion surplus. Multiple tenancy program approved January 1949. Small portion non-surplus
Howard Foundry Company, Inc. Chicago, Illinois $2,587,000	Navy	Magnesium castings	Sold July 1948 to Howard Foundry Co. with NSC.
I-T-E Circuit Breaker Co. Philadelphia, Pa. $1,607,000	Navy	Electric control devices	Sold Dec. 22, 1947 by Navy to I-T-E Circuit Breaker Company subject to NSC.
Jack & Heintz, Inc. (Plant No.3) Bedford, Ohio $2,800,000	Navy	Aircraft automatic pilots and flight instruments	Leased to Jack & Heintz through February 1951, with purchase option.
Jack & Heintz, Inc. (Plant No.4) Bedford, Ohio $1,488,000	Navy	Gyro-flight instruments	Leased to Jack & Heintz through February 1951, with purchase option
Jacobs Aircraft and Engine Co. (Firestone Tire & Rubber Co.) Pottstown, Penna. $10,220,000	Air Force	Aircraft engines	Leased to Firestone through January 1953, with purchase option. If purchase option not exercised, NSC to be applied on land, buildings and non-severable equipment.
Jeffersonville Boat & Machine Co. Jeffersonville, Indiana $3,742,000	Navy	Escort vessels and landing craft	Sold June 1947 to Jeffersonville Boat & Machine Company, subject to modified NSC.
Jones Construction Co., J. A. (Wainwright Shipyard) Panama City, Florida $7,864,000	Navy	Ships	Surplus. NSC to be applied only to permanent portion of ways and related personalty.
Kaiser Shell Plant Fontana, California $5,647,000	Navy	Forgings, machining and heat treating of shells	Sold August 1948 to Taylor Forge & Pipe Co., Chicago, subject to NSC modified to exclude five-nosing furnaces.
Kerotest Manufacturing Co. Pittsburgh, Pa. $653,000	Navy	Steel valves	Sold December 1947 by Navy Department to Kerotest Manufacturing Co., subject to NSC.
King Machine Tool Co. Cincinnati, Ohio $1,874,000	Navy	Machine tools	Sold July 1947 by Navy subject to NSC to American Steel Foundry Co.
Koppers, Inc. (Bartlet Hayward Plant) Baltimore, Md. $1,300,000	Army	40 MM gun carriages	Sold April 1948 to Transit Storage Company, subject to NSC on land and buildings.
Kropp Forge Company Cicero, Illinois $1,287,000	Air Force	Drop hammer capacity for steel forgings	Sold August 1948 to Kropp, subject to NSC.
Ladish Drop Forge Co. Cudahy, Wisconsin $3,347,000	Air Force	Drop hammer capacity for steel forgings	Sold May 1947 to Ladish subject to modified NSC.
Lehigh Foundries, Inc. Easton, Penna. $1,575,000	Army	50 MM & 81 MM shell casings	Leased to May 1952 to Lehigh Foundries, subject to modified NSC, with option to purchase.
Lima Tank Arsenal Lima, Ohio $1,169,000	Army	Medium tanks	Sold July 1948 to the Lima-Hamilton Corp. (successor to Lima Loco. Works), subject to NSC for five years.
Lockheed Aircraft Corp. Van Nuys, California $3,458,000	Navy	Aircraft modification and repair	Sold to City of Van Nuys, California as airport property.

FACILITY	SPONSOR IN NIR	PRODUCT	STATUS
Magnesium Reduction Company (assignee of National Lead Co.) Luckey, Ohio $2,317,000	Air Force	Magnesium	Transferred to FWA
Martin Company, Glenn L. Baltimore, Maryland $2,217,000	Navy	Airplanes	Non-surplus. In production (Held by Department of Navy.)
McDonnell Aircraft Corp. (South Portion) St.Louis, Mo. $10,238,000	Navy	Aircraft	Sold to City of St.Louis in March 1947, subject to NSC for two years from date of sale.
McKiernan-Terry Company Harrison, New Jersey $2,559,000	Navy	Steering gears, anchors and windless-catapults	Sold December 1947 by Navy Department to McKiernan-Terry Company, subject to NSC.
Menasco Manufacturing Company Burbank, California $1,866,000	Air Force	Aircraft landing gear struts	Leased to June 1951 to Menasco, subject to NSC, with two-year renewal option and option to purchase.
Midvale Company (Baldwin Locomotive Wks) Nicetown, Pa. $1,959,000	Navy	Bombs, guns, ordnance, projectiles	Sold June 1947, subject to modified NSC to RFC for resale to Potts-Farrington, Inc. and Wiedemann Machine Company.
Moore Drydock Co. (West Yard) Oakland, Calif. $17,350,000	Navy	Ships	Surplus. Several interim leases in effect. East Yard removed from NSC by Navy November 1948.
Muskegon Motor Specialties Corp. Muskegon, Mich. $125,000	Navy	Camshafts for engines	Sold May 1947 to Madison Manufacturing Company, subject to modified NSC applied to land and buildings only.
New England Lime Co. Canaan, Conn. $4,391,000	Air Force	Magnesium	Transferred to FWA.
New England Shipbuilding Corp. (So. and East Yards) South Portland, Maine $23,179,000	Navy	Ships	Sold June 1948 to Dinger Contracting Company subject to NSC. NSC modified by Munitions Board October 1948.
Nicaro Nickel Company. Nicaro, Cuba $33,500,000	Navy	Nickel	Surplus.
Norfolk Shipbuilding & Drydock Co. Norfolk, Virginia $6,014,000	Navy	Ship repair	Non-surplus; held by Navy. Department of Navy negotiating with contractor for long-term lease.
Northwestern Aeronautics Corp. St. Paul, Minn. $882,000	Navy	Air-craft (Gliders)	Leased to March 1951 to Engineering Research Associates, Inc.
Odenbach Shipbuilding Corporation Rochester, New York $633,000	Army	Gasoline tankers	Sold November 1948 to Odenbach Holding Corp., subject to NSC.
Ohio Steel Foundry Co. Lima, Ohio $6,202,000	Army	Steel castings	Leased to April 1949 to Ohio Steel Foundry Company with two year renewal option.
Ohio Steel Foundry Co. Lima, Ohio $3,790,000	Navy	Steel castings	Surplus. Under interim lease to Ohio Steel Foundry Co.
Pacific Car & Foundry Company Renton, Wash. $5,610,000	Army	Armor steel castings and tanks (M-4)	Surplus. Under interim lease to Pacific Car & Foundry Co.
Pantex Ordnance Plant, Amarillo, Texas $17,000,000	Army	Ammunition loading	Surplus. Portions leased to Texas Technological College to June 1953 and February 1954, subject to modified NSC. NSC to be applied on remainder. Entire installation classified as non-industrial.
Permanente Metals Corporation Manteca, Calif. $3,507,000	Air Force	Magnesium	Transferred to FWA.
Phillips Petroleum Co. (Rock Pam Pipeline) Borger, Texas $950,000	Munitions Board	Pipeline	Sold to Phillips Petroleum Co. in November 1948, subject to NSC for ten years.
Pine Bluff Arsenal (2.84 mile gas line) Pine Bluff, Arkansas	Army	Pipeline	Surplus. NSC to be applied to guarantee that current and future demands of the Arsenal will be met at a cost to the Government whic would not exceed current prevailing rates, and that the Government will be give the benefit of any subseque reduction in prevailing rates.
Pittsburgh Steel Foundry Corp. Glassport, Pa. $7,562,000	Army	Steel	Sold May 1948 to Pittsburgh Steel Foundry Corp., subject to NSC.
Powell Company, William Cincinnati, Ohio $1,154,000	Navy	Steel valves	Sold May 1947 to William Powell Company, under purchase option, subject to modified NSC.
Pullman Standard Car Manufacturing Co. Chicago, Illinois $5,495,000	Navy	Aircraft sub-assemblies (Wings, tails, etc.)	Leased to General Motors to December 1951 with renewal options extending to December 1956, and option to purchase.
Pullman Standard Car Mfg. Co. (Calumet Harbor Yard) Chicago, Illinois $4,774,000	Navy	Shipyard (Sub-chasers; Minesweepers)	Surplus. Minor portions under interim lease to Griswold & Batman, Inc., and to Dealers Transport Company.
Remington-Rand, Inc., Johnson City, N. Y. $4,905,000	Air Force	Aircraft propellers	Leased to General Electric Co. to November 1953, subject to NSC, with five-year renewal option.
Republic Steel Corp. South Chicago, Ill. $92,500,000	Army	Steel	Sold April 1947 to Republic Steel Corp., subject to modified NSC.
Revere Copper & Brass Co., Inc. Halethorpe, Md. $2,704,000	Air Force	Aluminum and magnesium extrusions	Surplus
Revere Copper & Brass Company, Inc., Chicago, Illinois $11,292,000	Army	Ammunition brass and cups	Surplus
Ridgewood Steel Co. Cincinnati, Ohio $8,800,000	Army	Gun forgings	Portion withdrawn February 1948 by Department of Army for National Guard use. Remainder transferred to FWA.
Rohr Aircraft Corp. Chula Vista, Calif. $1,946,000	Navy	Aircraft assemblies; bomb racks and bomb-bay doors	Leased to Rohr to January 1954, subject to NSC on land and buildings only. Cafeteria and warehouse areas sold July 1946. Hangar and seaplane ramp in surplus inventory.
Scullin Steel Co. St. Louis, Mo. $3,115,000	Army	Steel castings	Sold October 1948 to Scullin Steel Co., subject to NSC.
Scullin Steel Co. St. Louis, Mo. $13,192,000	Army	Steel castings	Surplus. Building #31 leased to January 1952 and two storage sheds under interim lease to St. Louis School for Electricity and Refrigeration Inc., for experimental purposes. Open hearth facilities leased to Scullin Steel Co. to September 1950 with NSC, with one year renewal option.
Sealed Power Corp. Muskegon, Michigan $593,000	Air Force	Piston rings (aircraft)	Sold June 1948 to Sealed Power Corporation, subject to NSC. Parking lot (not subject to NSC) sold January 1949 to Sealed Power Corporation.
Smith Corp., A.O. Milwaukee, Wis. $2,125,000	Air Force	Landing gear	Leased to General Motors Corp. (A.C.Spark Plug Div.) to September 1953, subject to NSC.

FACILITY	SPONSOR IN NIR	PRODUCT	STATUS
olar Aircraft Co. es Moines, Iowa 1,681,000	Air Force	Exhaust manifolds	Sold to Solar Aircraft Corp. subject to NSC.
outhern Aircraft orp. arland, Texas 1,245,000	Navy	Gun turrets, bomb-bays, control surfaces	Leased to Mar.1951 to Southern Aircraft Corp.with option to purchase.
perry Gryoscope Co., nc., reat Neck, L.I.,N.Y. 19,000,000	Navy	Aircraft parts (sights, turrets, indicators,etc.)	Portion leased to United Nations through June 1949. Remainder leased to Sperry Gyroscope Company through August 1949,with renewal option to extend to August 1951, and option to purchase entire plant.
tandard Steel Spring ompany, adison, Ill. 23,025,000	Air Force	Rear axles for motor vehicles	Leased to Western Reserve Steel Corp.,subject to NSC to January, 1954, with five-year renewal option and option to purchase, subject to NSC. Off-site electric power equipment released from NSC restrictions in February 1949.
terling Engine Co. uffalo, New York 585,000	Navy	Marine engines	Non-surplus (Navy).Disposal to Sterling Engine Co. being effected by Navy.
tudebaker Corp. hicago, Ill. 25,318,000	Air Force	Aircraft engine parts	Sold December 1948 to National Tea Co.,subject to NSC, and subject to lease to Western Electric Co. to December 1950.
Studebaker Corp. South Bend, Ind. 50,130,000	Air Force	Aircraft engines	Sold October 1947 to Studebaker Corp.subject to modified NSC on land and buildings only.
un Shipbuilding & rydock Company hester, Pa. $23,949,000	Navy	Ships	Surplus - Portion under interim lease to Sun Shipbuilding and Drydock Co.
Sundstrand Machine ool Co. ockford, Ill. $427,000	Air Force	Hydraulic equipment for gun turrets	Sold August 1948 to Sundstrand, subject to NSC.
ymington-Gould Corp. epew, New York $1,256,000	Army	Armor castings	Sold June 1948 to Symington-Gould Corp.subject to modified NSC for ten years on land and buildings only.
imken Detroit Axle o., etroit, Mich. 3,671,000	Army	Axles and transfer cases	Leased to Timken Detroit Axle Co. through April 1949, with option to purchase.
imken Detroit Axle o., elvindale, Mich. 5,194,000	Army	Forgings	Leased to Timken Detroit Axle Co. to April 1949, with option to purchase.
imken Roller Bearing Company, olumbus, Ohio 1,217,000	Air Force	Tapered roller bearings	Sold September 1947 to Timken Roller Bearing Co., subject to modified NSC.
nited Aircraft Corp. Chance Vought Aircraft Division) tratford, Conn. 3,151,000	Navy	Airplanes	Surplus. Part under interim lease to September 1948 to United Aircraft Service Corp. Part (approximately half) sold June 1947 to contractor by Navy, with NSC.
United States Rubber Company Los Angeles, Calif. $1,330,000	Navy	Electric cables	Non-surplus (Held by RFC.)
Vickers, Inc., Detroit, Michigan $9,865,000	Navy	Hydraulic equipment for aircraft gun turrets	Sold July 1948 to State of Michigan for National Guard use.
Waco Aircraft Co. Troy, Ohio $739,000	Air Force	Aircraft	Leased to B. F. Goodrich to August 1951 with five-year renewal and option to purchase.
Wah Chang Trading Corp., Glen Cove, New York $675,000	Navy	Tungsten ore treatment	Non-surplus. Modified NSC to require maintenance of capacity only (Held by RFC.)
Warren City Mfg. Co. Warren, Ohio $6,000,000	Navy	Marine Diesel engine connecting rods	Sold by Navy in November 1948 to Warren City Mfg.Co. with NSC.
Wenatchee Alloys,Inc. Rock Island, Wash. $1,444,000	Navy	Ferrosilicon	Sold August 1948 to Keokuk Electro-Metals Co.,subject to modified NSC to require maintenance of ferrosilicon capacity.
Westinghouse Electric Manufacturing Co., Lansdowne, Maryland $3,006,000	Navy	Radio & communications equipment	Leased to Westinghouse Electric Manufacturing Co. to November 1953,subject to NSC, with option to purchase subject to NSC.
Wright Aeronautical Corp., Lockland, Ohio $56,300,000	Air Force	Aircraft engines	All except three foundries sold December 1947 to Electric Auto-Lite Company, subject to modified NSC on land and buildings only. Three foundries transferred to Department of Air Force for war reserve retention.
Wright Aeronautical Corp. (South Portion-Plant #4) East Paterson, N. J. $3,945,000	Air Force	Aircraft engines	Sold to Allen B.Dumont Lab. Inc., October 1948,subject to modified NSC on land and buildings.
Wyman-Gordon Products Corp. Harvey, Illinois $7,340,000	Air Force	Steel forgings (drop hammer capacity)	Sold March 1948 to Wyman-Gordon Products Corp.,subject to NSC.
Wyman-Gordon Products Corp., North Grafton,Mass. $4,058,000	Air Force	Magnesium & aluminum forgings (drop hammer capacity)	Non-surplus (Air Force)
Youngstown Sheet & Tube Co. Indiana Harbor, Ind. $1,885,000	Navy	Steel ingots	Sold June 1948 to McLouth Steel Corporation for removal to Detroit, subject to NSC modified to permit removal.
Tin Processing Corp. Texas City, Texas $7,650,000	Army	Tin smelting and refining	Non-surplus (Held by RFC.)

THE above listing does not include all plants in the National Industrial Reserve. Plants not closely associated with the metal working industry were not included in THE IRON AGE compilation. The complete list includes 236 plants or portions of plants.

Steel Company Earnings Rose 32 pct. in 1948 on Sales of $8.5 Billion

Sales Volume Gained 22 Pct While 24 Pct Was Added To Surplus Account

By GEORGE F. SULLIVAN
Pittsburgh Regional Editor

The First Dozen

Pittsburgh

• • • Net income, in thousands of dollars, of the first 12 steel companies (rated in order of reported 1948 profits) with the percentage of increase in 1948 over 1947, is as follows:

	1948	1947	Pct Increase 1948 over 1947
U. S. Steel Corp.	$129,628	$127,098	2.0
Bethlehem Steel Corp.	90,348	51,088	76.8
Republic Steel Corp.	46,438	31,018	49.7
National Steel Corp.	40,122	26,839	49.5
Inland Steel Corp.	38,607	29,889	29.2
Youngstown Sheet & Tube Co.	35,712	26,300	35.8
Armco Steel Corp.	32,031	25,002	28.1
Jones & Laughlin Steel Corp.	31,222	19,225	62.4
Wheeling Steel Corp.	15,050	11,651	29.2
Sharon Steel Corp.	9,235	6,722	37.4
Allegheny Ludlum Steel Corp.	6,833	6,003	13.8
Colorado Fuel & Iron Corp.	6,182	5,089	21.5

Pittsburgh

• • • **The 1948 profits** of 26 steel companies which account for 91 pct of the nation's steel ingot capacity were 32.4 pct higher than they were in 1947. Few steelmakers expect 1949 to be as profitable as 1948; this looks like a "good" year for steel but it will take something not now in the cards to top 1948's earnings.

Sales and operating revenues of the 26 companies reported upon here amounted to a record $7,859,579,001 in 1948. This was $1,421,979,881, or about 22 pct, more than 1947 sales and operating revenue. Their 1948 net income was $522,734,361. For the entire industry, total sales were approximately $8.5 billion and profits about $575 million.

Since shipments were up only 4.6 pct, much of the profit gain came from more efficient operations and higher steel prices. It should be understood too that many steel companies have subsidiaries that do not make steel though their sales and profits are consolidated with those of the parent company.

The full effects of improved raw materials and processes were not obvious in the 1948 operating picture. The industry as a whole was only able to push operations from 92.9 to 94 pct of rated steelmaking capacity. Nevertheless, the 26 steelmakers whose financial story is told at the right, were able to produce about 3.4 million net tons, or 4.4 pct more raw steel than they made in 1947. In terms of finished steel there was an estimated gain of 2,650,000 net tons.

Despite a 32.4 pct increase in net income, these companies boosted common stock dividends by only 7.1 pct. Surplus, however, rose almost 24 pct. Working capital was upped by 5.4 pct, while invested capital was increased by 15.3 pct. Though many stockholders have complained of being treated like country cousins the reason is obvious: Generally speaking, the industry is battening down the hatches in case of rough weather ahead.

Provisions for Federal income taxes were increased by about 41 pct. This tax alone amounts to $6.24 on every ton of finished steel sold last year.

Reflecting increased prices, higher operating rates and bigger scrap stocks, the overall inventories of steel companies were substantially higher at the end of 1948 than they were a year before that. Money tied up in inventory rose about 19 pct for the industry as a whole though in some companies the increase was as much as 40 pct. Part of this gain came from an increase in semifinished products. Recently, stocks of billets, blooms, slabs, sheet bars and tube rounds at finishing mills have often been too low for efficient mill operations.

Steel executives are pressing for a law or an Internal Revenue Dept. ruling which will permit them a more realistic depreciation policy. Meanwhile there is little uniformity throughout the industry in treatment of this item. Some companies have anticipated increased replacement costs by boosting surplus, retaining more money in the business. Some have allotted specific sums for this purpose, despite a frown from the American Institute of Accountants and no tax credit from Washington. U. S. Steel has a third method, one of accelerated depreciation based on cost instead of purchasing power recovery.

Because of these various ways of treating reserves for depreciation, and hence of net income, the net income figures shown here are not all strictly comparable. Nevertheless they are the figures as reported.

THE IRON AGE Financial Analysis of the Steel Industry, 1948-1947

DATA COVER OPERATIONS OF 26 COMPANIES REPRESENTING 91 PCT OF THE INGOT CAPACITY OF THE UNITED STATES AS OF JAN. 1, 1948

COMPANY	Year	Ingot Capacity Net Tons[16]	Ingot Production Net Tons	Percent of Capacity Operated	Steel Shipments Net Tons	Net Sales and Operating Revenue	Provision for Federal Income Taxes	Net Income	Net Income Percent of Sales	Number of Common Shares Outstanding	Earnings Per Common Share	Common Dividends Declared	Number of Preferred Shares Outstanding	Preferred Dividends Declared	Funded Debt[1]	Preferred Stock	Common Stock	Surplus	Invested Capital	Working Capital	Capital per Ton of Ingot Capacity	Income per Ton of Ingot Capacity	Income per Ton of Ingot Production	Year	COMPANY
U. S. Steel Corp.	1948	31,300,000	29,300,000	93.8	20,700,000	$2,481,508,535	$109,000,000	$129,627,845	5.2	8,703,252	$12.00	$ 52,219,512	3,602,811	$25,219,677	$71,554,196	$360,281,100	$870,325,200	$602,453,693	$1,904,614,189	$469,505,437	$60.85	$4.14	$4.42	1948	U. S. Steel Corp.
	1947	31,200,000	28,600,000	96.7	20,200,000	2,122,786,243	91,000,000	127,098,148	6.0	8,703,252	11.71	45,692,073	3,602,811	25,219,677	77,229,313	360,281,100	652,743,900	497,846,337	1,588,100,650	548,648,098	50.90	4.07	4.44	1947	
Bethlehem Steel Corp.	1948	13,800,000	13,411,492	97.2	9,993,481	1,315,188,536	57,225,000	90,347,560	6.9	8,954,982	9.36	21,491,956	933,887	6,537,209	121,814,000	93,388,700	283,574,430	268,208,157	766,985,287	280,644,542	55.58	6.55	6.74	1948	Bethlehem Steel Corp.
	1947	12,900,000	12,806,940	99.3	9,403,067	1,034,856,444	31,000,000	51,088,375	4.9	8,954,982	4.98	17,909,964	933,887	6,537,209	123,814,000	93,388,700	283,574,430	188,459,762	689,236,892	290,114,970	53.43	3.96	3.99	1947	
Republic Steel Corp.	1948	8,600,000	8,324,172	96.8	6,405,581	772,000,047	34,000,000	46,438,382	6.0	5,882,604	7.61	12,757,289	282,143	1,692,858	70,370,270	28,214,300	138,189,928	163,970,323	400,744,821	148,633,092	46.60	5.40	5.58	1948	Republic Steel Corp.
	1947	8,600,000	7,987,170	92.9	6,073,125	649,824,006	23,250,000	31,018,410	4.8	5,669,922	5.17	11,339,812	282,143	1,692,858	79,780,699	28,214,300	130,309,141	134,591,348	372,895,488	124,517,061	43.36	3.60	3.88	1947	
Jones & Laughlin Steel Corp.	1948	4,815,000	4,633,558	97.0	3,695,414	446,057,301	18,950,000	31,222,451	7.0	2,476,502	12.01	5,324,479	293,568	1,467,840	60,000,000	29,356,800	96,507.400	125,303,616	311,167,816	107,387,078	64.62	6.48	6.74	1948	Jones & Laughlin Steel Corp.
	1947	4,740,000	4,520,387	95.0	3,486,305	350,132,366	11,482,000	19,225,184[3]	5.5	2,476,502	7.17	4,953,004	293,568	1,467,840	60,094,664	29,356,800	96,507,400	102,361,267	288,320,131	88,836,383	60.83	4.06	4.25	1947	
National Steel Corp.	1948	4,050,000	....	....	....	436,522,051	33,300,000	40,121,506	9.2	2,453,900	16.35	11,154,085[2]	None	None	40,000,000	None	61,347,500	167,457,222	268,804,722	98,162,348	59.73	9.91	....	1948	National Steel Corp.
	1947	3,900,000	....	....	....	328,957,189	19,270,000	26,838,788	8.2	2,230,817	12.03	8,923,068	None	None	40,000,000	None	55,770,425	144,066,831	239,837,256	73,371,176	61.50	6.88	.....	1947	
Youngstown Sheet & Tube Co.	1948	4,002,000	3,966,099	99.1	2,982,057	381,742,264	25,400,000	35,711,732[11]	9.4	1,675,008	21.32[11]	8,375,040	None	None	30,000,000	None	105,088,053	99,474,676	234,562,729	149,085,855	58.61	8.92	9.00	1948	Youngstown Sheet & Tube Co.
	1947	4,002,000	3,959,343	98.9	2,853,801	308,571,405	16,635,000	26,299,923[11]	8.5	1,675,008	15.70[11]	8,375,040	None	None	30,000,000	None	105,088,053	78,137,984	213,226,037	119,354,087	53.28	6.57	6.64	1947	
Armco Steel Corp.	1948	3,563,000	3,332,261	93.5	2,572,608	382,563,811	20,072,015	32,030,712	8.4	3,909,361	8.00	7,783,051	199,930	899,708	69,160,000	19,993,000	39,093,612	127,431,754	255,678,366	112,533,281	71.76	8.99	9.61	1948	Armco Steel Corp.
	1947	3,367,000	3,078,487	91.4	2,413,406	311,685,322	16,464,876	25,002,211	8.0	3,241,276	7.44	6,481,046	199,930	899,709	37,000,000	19,993,000	32,412,764	107,094,839	196,500,603	76,821,865	58.36	7.43	8.12	1947	
Inland Steel Co.	1948	3,400,000	3,533,374	103.9	3,252,681	392,708,370	23,221,000	38,606,899	9.8	4,899,315	7.88	....	None	None	73,250,000	None	62,500,000	95,561,697	231,311,697	121,275,990	68.03	11.35	10.93	1948	Inland Steel Co.
	1947	3,400,000	3,299,528	97.0	2,941,990	315,031,042	18,485,000	29,888,558	9.5	4,899,315	6.10	12,248,288	None	None	54,000,000	None	62,500,000	75,502,744	192,002,744	104,903,912	56.47	8.79	9.06	1947	
Sharon Steel Corp.	1948	1,672,000	1,298,383	77.7	964,987	118,849,560	5,811,000	9,234,983	7.8	617,242	14.96	1,543,103	None	None	9,900,000	None	6,232,810	32,392,770	48,525,580	24,774,495	29.02	5.52	7.11	1948	Sharon Steel Corp.
	1947	1,672,000	1,222,887	76.6	912,962	94,130,807	4,225,000	6,722,019	7.1	617,242	10.89	1,234,482	None	None	4,000,000	None	6,232,810	23,761,861	33,994,671	18,599,902	20.33	4.02	5.50	1947	
Colorado Fuel & Iron Corp.[4]	1948	1,472,000	1,395,717	94.8	1,225,027	118,858,896	3,659,100	6,181,777	5.2	1,127,185	5.04	1,408,554	501,403	502,785	8,800,000	10,028,067	5,635,925	42,478,406	66,942,398	19,094,581	45.48	4.20	4.43	1948	Colorado Fuel & Iron Corp.
	1947	1,448,640	1,369,460	94.5	1,046,008	94,740,442	2,676,815[3]	5,088,676[3]	5.4	1,126,775	4.07	957,789	502,818	502,830	9,750,000	10,056,357	5,633,875	34,874,261	60,314,493	17,217,825	41.64	3.51	3.72	1947	
Wheeling Steel Corp.	1948	1,409,000	1,303,424	92.5	....	154,953,406	10,000,000	15,050,045	9.7	569,559	23.24	1,566,287	363,166	1,815,830	42,103,000	36,316,600	28,477,950	48,649,214	155,546,764	56,388,428	110.40	10.68	11.55	1948	Wheeling Steel Corp.
	1947	1,409,000	1,285,832	91.3	....	131,721,128	7,760,000	11,651,579[3]	8.8	569,559	17.27	996,728	363,166	1,815,830	42,850,000	36,316,600	28,477,950	36,981,286	144,625,836	52,778,524	102.64	8.27	9.06	1947	
Crucible Steel Co. of America	1948	1,277,133	....	....	....	131,360,030	2,748,021	3,596,177	2.7	488,683	4.15	None	313,576	1,567,855	25,007,500	31,357,600	12,217,077	24,836,603	93,418,780	32,541,895	.....	.....	.....	1948	Crucible Steel Co. of America
	1947	1,253,650	....	....	....	110,503,836	1,084,466	2,064,887	1.9	443,684	1.12	None	313,579	1,567,980	24,505,000	31,357,900	11,092,097	22,807,983	89,762,980	32,472,422	71.80	1.65	....	1947	
Pittsburgh Steel Co.	1948	1,072,557	976,218	91.0	774,108	102,858,785	4,350,000	5,484,090	5.3	508,917	9.07	None	164,382	823,760	7,020,640	16,438,200	4,862,190	26,519,999	54,841,029	23,550,867	.....	.....	.....	1948	Pittsburgh Steel Co.
	1947	1,072,557	1,006,888	93.9	737,978	85,873,537	3,175,000	4,019,637	4.7	508,917	6.20	None	164,382	481,467	6,735,720	16,438,200	4,862,190	21,860,000	51,810,390	20,750,417	48.31	3.75	3.99	1947	
Portsmouth Steel Cor	1948	660,000	647,816	98.2	523,096	58,904,664	2,600,000	4,511,550	7.7	1,273,200	3.54	1,280,188	....	....	....	....	1,352,500	17,948,475	19,300,975	9,361,587	29.24	6.84	6.96	1948	Portsmouth Steel Corp.
	1947	660,000	667,011	101.1	528,968	49,459,952	2,358,000	3,944,969	8.0	1,301,550	3.03	979,212	....	....	....	....	1,352,500	15,060,241	16,412,741	8,882,540	24.87	5.98	5.91	1947	
Lukens Steel Co.[5]	1948	624,000	647,876	103.8	....	61,460,919	1,675,000	2,411,604	3.9	317,976	7.35	476,964	None	None	None	None	3,179,760	14,686,885	17,866,645	8,939,351	28.63	3.86	3.72	1948	Lukens Steel Co.
	1947	624,000	637,347	102.1	442,550	48,591,687	1,746,200	2,697,117	5.6	317,976	8.92	445,166	None	None	None	None	3,179,760[6]	12,733,059[6]	15,912,819[6]	7,324,843	25.50	4.32	4.23	1947	
Granite City Steel Co.	1948	620,000	493,720	79.6	408,449	41,370,688	2,370,000	3,267,707	7.9	382,488	8.54	860,603	None	None	2,882,525	None	8,483,821	8,229,787	19,596,133	6,904,782	31.61	5.27	6.62	1948	Granite City Steel Co.
	1947	500,000	440,398	88.1	347,047	25,869,719	880,000	1,941,899	7.5	382,488	5.08	382,488	None	None	4,185,000	None	8,483,821	5,822,683	18,491,504	5,314,940	36.98	3.88	4.41	1947	
Copperweld Steel Co.	1948	554,400	....	....	....	75,570,115	3,414,500	4,989,019[13]	6.6[13]	514,864	9.54[13]	1,390,133	28,880	76,952	None	1,444,000	2,574,320	9,795,974	13,814,294	8,569,442	24.92	9.00[13]	.....	1948	Copperweld Steel Co.
	1947	480,000	....	....	....	53,303,245	1,179,500	1,546,711	2.9	514,864	2.85	411,891	32,460	81,852	3,125,000	1,623,000	2,574,320	7,461,715	14,784,035	9,170,016	30.80	3.22	.....	1947	
Alan Wood Steel Co.	1948	550,000	530,691	96.5	425,114	47,480,574	2,842,000	4,116,444	8.7	483,767	7.78	483,662	70,363	353,084	6,300,000	7,182,500	4,874.030	7,553,416	25,738,866	6,444,468	46.80	7.48	7.76	1948	Alan Wood Steel Co.
	1947	550,000	449,945	81.8	323,853	35,971,661	1,238,000	1,955,446	5.4	200,000	7.26	None	71,824	1,221,008	None	7,182,433	4,388,889	5,637.679	17,209,001	6,107,704	31.29	3.56	4.35	1947	
The Midvale Co.	1948	517,322	64,962	12.6	....	10,509,015	None	*1,665,718*	*15.9*	600,000	*2.78*	1,048,949	None	None	None	None	10,574,621	7,159,833	17,734,454	12,434,962	34.28	*3.22*	*25.64*	1948	The Midvale Co.
	1947	517,322	84,020	16.2	....	14,829,373	None	*1,186,727*[7]	*8.0*	600,000	*1.98*	1,198,785	None	None	None	None	10,574,621	9,874,500	20,449,121	15,219,255	39.53	*2.29*	*14.12*	1947	
Allegheny Ludlum Steel Corp.	1948	496,360	462,306	93.1	428,000	126,780,255	4,601,358	6,833,384	5.4	1,288,831	5.05	2,577,662	107,383	319,754	None	10,738,300	8,055,194	35,276,183	54,069,677	29,904,565	108.93	13.77	14.78	1948	Allegheny Ludlum Steel Corp.
	1947	496,360	411,107	82.8	357,000	106,783,183	4,068,068	6,002,657	5.6	1,288,831	4.66	2,577,008	None	None	None	None	8,055,194	31,683,177	39,738,371	20,846,259	80.06	12.09	14.60	1947	
Barium Steel Corp.	1948	441,000	390,000	88.4	310,000	51,257,670	2,048,176	2,700,000[12]	5.3[12]	1,978,831	1.36[12]	None	None	None	None	None	1,978,831	10,573,589	12,552,420	5,031,410	28.46	6.12[12]	6.92[12]	1948	Barium Steel Corp.
	1947	387,000	318,000	82.2	280,000	41,365,948	1,104,564	1,689,213	4.1	2,001,381	.84	None	None	None	None	None	2,001,381	8,250,754	10,252,135	3,738,561	26.49	4.36	5.31	1947	
Continental Steel Corp.	1948	364,000	317,927	87.3	....	29,743,309	1,200,000	1,625,150	5.5	501,365	3.24	877,390	None	None	None	None	7,018,866	8,074,734	15,093,600	7,373,605	41.47	4.46	5.11	1948	Continental Steel Corp.
	1947	364,000	316,644	87.0	....	27,086,139	890,000	1,296,874	4.8	501,370	2.58	752,059	None	None	None	None	7,018,970	6,890,353	13,909,323	6,309,514	38.21	3.56	4.10	1947	
Rotary Electric Steel Co.	1948	340,000	247,658	94.5	227,280	18,940,250	1,500,000	2,496,859	13.2	192,939	12.94	2,496,630[2]	None	None	None	None	1,929,390	4,151,847	6,081,237	2,344,006	17.89	7.34	10.08	1948	Rotary Electric Steel Co.
	1947	255,000	201,556	79.0	176,246	16,500,149	544,000	903,360	5.5	167,025	5.41	None	None	None	731,654	None	1,670,250	2,067,287	4,469,191	2,634,289	17.53	3.54	4.48	1947	
Laclede Steel Co.	1948	326,025	278,170	85.3	284,538	34,072,411	1,165,000	1,767,863	5.2	206,250	8.57	721,875	None	None	2,309,673	None	4,125.000	4,193,831	10,756,331	5,005,390	32.99	5.42	6.36	1948	Laclede Steel Co.
	1947	326,025	288,038	88.3	272,852	26,283,120	956,913	1,429,035	5.4	206,250	6.93	515,625	None	None	2,437,500	None	4,125,000	3,147,843	9,772,843	4,769,058	29.98	4.38	4.96	1947	
Northwestern Steel & Wire Co.[8]	1948	321,000	287,670	89.6	....	26,641,518	1,180,000	1,858,790	7.0	817,825	2.27	817,825	....	....	....	....	4,089,125	1,450,393	5,539,518	2,146,694	17.26	5.79	6.46	1948	Northwestern Steel & Wire Co.
	1947	321,000	261,045	81.3	....	21,185,519	1,319,000	1,932,747	9.1	817,825	2.36	1,104,064	....	6,545[9]	....	....	4,089,125	587,741	4,676,866	1,567,854	14.57	6.02	7.40	1947	
Keystone Steel & Wire Co.	1948	302,400	298,882	98.8	265,264	34,504,429	2,060,598	4,167,550	12.1	1,875,000[10]	2.22[10]	1,875,000	None	None	2,000,000	None	2,604,167	10,769,050	15,373,217	5,237,809	50.84	13.78	13.94	1948	Keystone Steel & Wire Co.
	1947	302,400	288,561	95.4	273,151	31,573,658	2,458,436	4,672,934	14.8	625,000	7.48	1,898,750	None	None	2,500,000	None	2,604,167	8,476,499	13,580,666	3,848,340	44.91	15.45	16.19	1947	
GRAND TOTAL	1948	86,549,197	80,565,700	94.0[15]	60,035,000[12]	$7,859.579,001	$374,392,768	$522,734,361	6.7	52,699,846	....	$138,530,237	6,861,492	$41,277,312	$642,471,804	$644,739,167	$1,774,891,700	$1,964,602,127	$5,026,661,545	$1,753,275,960	$58.08	$6.04	$6.48	1948	GRAND TOTAL
	1947	84,747,954	77,153,400	92.9[15]	57,382,000[12]	6,43[illegible]20	265,250,838	394,832,630	6.1	50,041,811	....	129,376,342	6,760,568	41,494,805	602,738,550	634,208,390	1,535,323,033	1,586,040,034	4,360,286,787	1,664,119,815	51.[illegible]	4.66	5.12	1947	
Percent change, 1948 over 1947		+2.1	+4.4	....	....	[illegible]	+41.1	+32.4	......	+5.3	....	+7.1	+1.5	−0.5	+6.6	+1.7	+15.6	+23.9	+15.3	+5.4	[illegible]	+29.6	+26.6		Percent change 1948 over 1947

1. Payable after 1 year.
2. Plus 10 pct stock dividend.
3. Adjusted.
4. Fiscal years ended June 30.
5. Unless otherwise noted, 52 weeks ended [illegible] 1948; Oct. 4, 1947.
6. For 56 weeks ended Nov. 1.
7. Estimated tax carryback reduced charge to surplus to $506,727.
8. Fiscal years ended July 31.
9. Preferred stock redeemed June 11, 1947.
10. Split 3 to 1.
11. Before appropriating $6,000,000 in 1948 and $4,000,000 in 1947 for higher replacement costs.
12. Estimated.
13. Before deducting $1,200,000 inventory and contingency reserve.
14. Estimated, based on national operating rate so as to include companies listed above that do not publish pro[illegible]tion figures.

[illegible] rate for entire industry by American Iron & Steel Institute.

Italics indicate loss.

16. At close of year.

Texas Steel Market

(CONTINUED FROM PAGE 137)

would now be in an over extended position from which it might be difficult to extricate themselves. Large distributers of oil country goods told THE IRON AGE that other supplies are good, inventories are high and generally steel demand will drop in months to come.

The gas industry is still going strong. If it weren't for this the pipe demand might really have gone to pot. When a hole is sunk, the driller never knows for sure whether he will strike gas or oil. As long as gas demand holds the drilling schedules appear to be relatively safe.

Steel fabricators last year were desperate for all types of shapes, plates, concrete bars, etc. They even bought Belgian steel. Most such orders were placed last summer at prices running as high as 9¢ per lb. Port of Houston officials told THE IRON AGE that 23,000 net tons of Belgian steel was brought into Houston last year. Of this tonnage 14,589 net tons were small shapes and plates. The balance was pipe, bars and H-R hand mill sheets.

By November and December of last year, buyers of this foreign steel found they didn't really need all the high priced tonnage. The domestic gray market had weakened and supplies were looking up. Starting in January steel brokers who had bought Belgian steel for future deliveries started shading their prices. Today this steel, some of it on the docks and some of it in transit or contracted for, is being offered at 5¢ or 6¢ a lb. Actually, there are brokers in Houston who sell this steel for what they can get in order to get rid of it. Thus this phase of steel supply into Texas is dead. Users claim this steel was of fair quality for acid bessemer grades. The plates and shapes worked well, but the tolerances on sheets were not as consistent as the home-made product.

Construction of large business buildings this year will be about 10 pct less, competent steel fabricators estimate. Home construction will continue to boom and highway building is expected to about equal last year. The big programs in new refineries, chemical plants, etc., are not as large as in 1948. Nobody in Texas thinks they will experience a bust in 1949, but none expect this year to equal '47 or '48.

HOUSTON'S $50 *million ship canal forms the vital* 50*-mile link to the sea for much of the chemical trinity which is Texas'. Along this waterway is located most of the "Who's Who" in the chemical industry.*

Officials of Texas Power and Light Co. told THE IRON AGE their expansion program remains unchanged. The rural electrification program is still far from complete. Although the huge population increases in centers like Houston, Dallas, etc., have slackened, a steady consistent growth remains. Electric power companies are encouraged over the delivery of vital equipment which for so long has been hard to get. On the average deliveries on power station equipment and other generating machinery has improved by 3 to 4 months since last fall. These executives say they expect even better deliveries for the balance of this year. Aluminum bus bar remains tight.

Gas companies are still complaining about delivery of large diameter pipe for the pipe lines already authorized by FPC. They admit the mills are doing better, but still delivery isn't good. For the most part these companies have stopped conversion deals and appear content to wait for the delivery of regular mill priced pipe.

All told, authorized gas and oil lines still to be built will require 2.2 million net tons of line pipe. This tonnage plus that necessary to complete planned lines totals almost 8 million tons, which based on last year's production will take about 4 years to satisfy. (See THE IRON AGE, Mar. 17, p. 139.)

The biggest shortage in pipe is in sizes over 24 in. in diameter. No matter what happens to general steel demand in Texas it is felt that this long range need of line pipe will keep the total steel tonnage consumed in the state somewhere near last year's shipments. This will only be true as long as all the planned lines are eventually authorized. Authorization itself does not guarantee that the lines will be built, but it's the closest to a guarantee as can be found anywhere in the industry.

Next to line pipe, carbon plates are the tightest steel product in the Texas markets. Wide flange beams are still tight, but market men in the state expect beams to be free long before plates ease. The plate shortage has eased to the place that premium prices are out. However, one of the large plate markets in the state, and for the general Southwest, is plates needed for LPG tanks.

This industry is in the throes of growing up and LPG tank makers frankly admitted to THE IRON AGE that the market picture on this item is foggy. The American Gas

Assn. has estimated that today there are 4½ million customers served by this type of facility. At the end of 1948, 320,000 customers were receiving LPG direct from utility mains. Dealers' storage tanks have caught up. What the potential market is in smaller tanks for home or on the site use, remains a question.

Last year when propane and butane supplies were temporarily cut off, a lot of consumers lost their enthusiasm for LPG systems. This particular segment of the gas industry is not organized and developed to the extent that a continuous minimum supply is guaranteed each day of the year. There are very large oil, gas, steel, and tank companies in the business, but until the consumer is given better assurance of supply the LPG industry will not be on solid ground.

After the war every welding shop that could secure plates started making tanks. Some for butane, others for propane. Today this market is in a slump, partly because of a mild winter, partly due to temporary over-production, but mostly because a dependable long range LPG policy has not been established.

Industrial Briefs . . .

• SOUTHERN HOSPITALITY—Southern States Iron Roofing Co., Savannah, Ga., manufacturers of metal roofing, has opened a new branch warehouse in New Orleans. The opening was celebrated with a 2-day housewarming party. In addition to its domestic activities, the new branch will be the center of Southern States' export operations.

• HARMONIZING — Delta Mfg. Div. of Rockwell Mfg. Co., Milwaukee, is sponsoring a manufacturer-dealer-customer relations program on the West Coast is a series of six "welding clinics." They will be in San Diego, Mar. 25-26; Los Angeles, Mar. 29-30; San Francisco, Mar. 31-Apr. 1; Portland, Apr. 5; Seattle, Apr. 7-8; and Vancouver, B. C., Apr. 9.

• ROLLING AGAIN — Production of Ford motor coaches, interrupted last November because of a strike at the plant of the Wayne Works, Inc., Richmond, Ind., builder of the Ford coach bodies, is being resumed, according to a recent announcement. It was said that the shutdown period had been used to incorporate design and engineering advancements.

• STAFF CHANGES — The National Foundry Assn. has named John Paul Ahern, formerly on the executive staff of the Manufacturers Assn. of Connecticut, as executive director. Edward E. Fries, who has been on the administrative staff of the association, has been promoted to the position of field secretary.

• NEW IRON—The Cooper-Bessemer Corp., Mt. Vernon, Ohio, heavy duty engine builders, has revealed that since the first of this year they have been licensed to produce magnesium-treated cast iron—the first license granted by the International Nickel Co., developers of this high strength, ductile iron.

• FOUNDRY AGENT — Whiting Corp., Harvey, Ill., has announced the appointment of the Minnesota Supply Co., 706 Portland Ave., Minneapolis, as agents for their varied line of foundry equipment.

• READY TO SERVE—Announcement has been made of the establishment of the Tuschman Steel Co., 5000 Detroit Ave., Junction Dixie & Telegraph Roads, Toledo, offering a complete scrap iron and steel service.

• BUSINESS FOR SALE—Sale of the Defiance Machine Works, Defiance, Ohio, as a going concern has been authorized by its owners. The company, which is engaged in a general purpose machine tool business, owns its own building, its own equipment and machinery and maintains an industrial research laboratory.

• OKAYS PERMIT—Negotiations have been completed between Hercules Motors Corp., Canton, Ohio, and Hispano Suiza of France, which licenses the latter company to build two series of Hercules high speed, heavy duty Diesel engines for application in commercial vehicles and industrial machinery in France.

• TAKES OVER — The purchase of the Machinery Div. of the Taylor Mfg. Co., Milwaukee, was announced by A. C. Flamme, formerly sales manager of the company, and C. E. Chavez, consulting engineer. The new company will be known as the Taylor Dynamometer & Machine Co. with offices at 5108 W. Center St., Milwaukee. They will manufacture drilling machines and hydraulic dynamometers.

• TOOL DIRECTOR — Roger F. Waindle, general manager of the Industrial Products Div. of the Elgin Watch Co., has been elected to the board of directors of the American Society of Tool Engineers.

Total Employment Again Drops in Massachusetts

Boston

• • • **Total employment** in Massachusetts in February was 19,100 less than in the previous month and 54,000 less than a year ago, according to figures compiled jointly by the U. S. Bureau of Labor Statistics and the State Department of Labor and Industries. Manufacturing employment dropped 7500 and nonmanufacturing employment fell 11,600. This left factory employment 56,800 less than in February a year ago, but nonmanufacturing employment was still 2800 greater than in 1948.

Extends Union Contract

Jamestown, N. Y.

• • • **Members** of Local 3411, United Steel Workers, approved extension of their contract with the Jamestown Malleable Iron Corp. for 90 days. Negotiations for a new agreement are scheduled to be resumed about June 1.

Nodular Graphite Gray Iron Developments Progressing Rapidly

Cleveland

• • • **Development** of the new nodular graphite gray iron is still in the experiment stage and is not yet available in commercial quantities, according to Gray Iron Founders' Society, Inc.

In a prepared statement, GIFS pointed out that the new iron is undergoing the transition from a laboratory product to a product which can be produced regularly in commercial foundries, but it will probably be a year or longer before purchasing agents can expect any large number of producers to be in position to accept specifications for this material.

Many gray iron foundries are working on the problem of making nodular graphite gray iron a commercial material.

Gray Iron Founders' Society said that this new type gray iron, while providing some mechanical properties in the order of two to four times that of the traditional product, does not provide some of the important engineering characteristics of gray iron containing flake graphite.

"**Vibration resistance** (damping capacity) is lower; the self-lubricating friction properties are not as good and the material is lower in castability (fluidity in the molten state). Thus, there will be thousands of industrial applications where the older type gray irons will be found better than the new.

"What nodular gray iron really does is to extend the range of mechanical properties available in this material. With tensile properties as high as 100,000 psi and elongations as high as 20 pct, it will be seen that gray iron will eventually cross over into the realms now exclusively occupied by carbon and low alloy cast steels and malleable irons," the GIFS statement pointed out.

"Some of the process mechanisms involve a high degree of accident hazard, particularly the one which employs magnesium as the nodulizing agent*. Highly explosive when brought into contact with molten iron, magnesium is frequently introduced into the ladle in the form of alloys containing some 80 pct of nickel or copper. Foundries interested in experimenting in this fascinating new field of metallurgy should study the available literature exhaustively before doing any development work. The safety hazards are very real."

**Regarding the accident hazard, an official International Nickel Co. spokesman said: "We have run hundreds of heats using magnesium and have encountered no undue hazards."*

Malleable Founders Group To Study Nodular Iron

Cleveland

• • • **An expanded** and continuing research program, including a special study in the field of nodular graphite iron to determine the most effective way in which the malleable iron industry's facilities and experience can be employed in the production of the new iron, was announced here this week by C. L. Carter, president, Malleable Founders' Society.

According to Mr. Carter's announcement, the research program will also include a study of methods aimed at further improvement of manufacturing methods and expanded markets.

The society's research committee chairman, C. A. Gutenkunst, Jr., has completed arrangements for conducting the work at the Southern Research Institute, Birmingham. L. J. Wise, Chicago; C. F. Lauenstein, Indianapolis, and W. A. Kennedy, Providence, comprise the metallurgical advisory group which with James H. Lansing, technical and research director of the Malleable Founders' Society, will cooperate in guiding the program, Mr. Carter's announcement stated.

"For present day uses of malleable iron castings, standard malleable iron will continue to provide an economical and tough material which may be easily machined at high production speeds.

"By utilizing its facilities and long experience in closely controlled production of malleable iron castings, the Malleable industry, through its research program, is placing itself in the position to intelligently supplement its standard malleable production with the production of malleableized nodular graphite iron castings, when and if this type of casting is proved to be economically and commercially feasible."

Coming Events

Apr. 8- 9	**Lead Industries Assn.**, annual meeting, Chicago.
Apr. 11-12	**American Machine Tool Distributors' Assn.**, spring meeting, Savannah, Ga.
Apr. 11-12	**American Zinc Institute**, annual meeting, St. Louis.
Apr. 11-14	**National Assn., of Corrosion Engineers**, annual conference and exhibition, Cincinnati.
Apr. 11-15	**Western Metal Congress and Exposition**, Los Angeles.
Apr. 14	**National Castings Council**, annual meeting, Cleveland.
Apr. 18-20	**Midwest Power Conference**, Chicago.
Apr. 18-20	**American Institute of Mining and Metallurgical Engineers**, annual conference of Openhearth Steel Committee, Chicago.
Apr. 19-20	**Magnesium Assn.**, annual meeting, Chicago.
Apr. 22-23	**American Institute of Mining & Metallurgical Engineers**, New England regional meeting, Springfield, Mass.
Apr. 25-26	**American Supply & Machinery Manufacturers Assn.**, Triple Mill Supply convention, Cleveland.
May 2- 3	**Assn. of Iron & Steel Engineers**, annual conference, Baltimore.
May 2- 4	**American Society of Mechanical Engineers**, spring meeting, New London, Conn.
May 2- 5	**American Foundrymen's Society**, annual convention, St. Louis.
May 4- 7	**Electrochemical Society**, semiannual meeting, Philadelphia.
May 5- 6	**American Society for Quality Control**, annual convention, Boston.
May 11-13	**National Welding Supply Assn.**, annual convention, Cincinnati.

Construction Steel . . .

• • • **Fabricated steel awards** this week included the following:

2685 **Tons**, Indianapolis, Veterans Hospital to R. C. Mahon Co., Detroit.

1800 **Tons**, Portland, Ore., Olympia-Coving steel towers, Bonneville Power Administration Inv. 4464, to Isaacson Iron Works, Seattle.

1350 **Tons**, Portland, Ore., steel towers for Grand Coulee Snohomish line, Bonneville Power Administration Inv. 4485, to Isaacson Iron Works, Seattle.

1200 **Tons**, Manhattan, Kans., field house, Kansas State University, to Johnston Iron Works, Kansas City, Mo.

770 **Tons**, Yellowstone Co., Mont., Bridge FI-53-9 to Pittsburgh Des Moines Steel Co., Des Moines, Ia.

700 **Tons**, Decatur, Ill., building for A. E. Staley Co. to Mississippi Valley Structural Steel Co., Chicago.

470 **Tons**, Hinsdale, Ill., high school building to Gage Structural Steel Co., Chicago.

450 **Tons**, Grand Coulee, Wash., tier logs, etc., Grand Coulee Dam, Bureau of Reclamation, Denver, Spec. 2540, to Pacific Car & Foundry, Seattle.

400 **Tons**, Salt Lake City, new plant for Royal Crystal Salt Co. to Structural Steel & Forge Co., Salt Lake City.

385 **Tons**, Philadelphia, State Hospital, to Lehigh Structural Steel Co., Allentown, Pa.

370 **Tons**, Chicago, surface and administration building for Chicago Transit Authority to J. T. Ryerson & Sons, Chicago.

310 **Tons**, Lake Andes, S. D., construction trestle through Western Contracting Corp., Sioux City, Ia., to Lakeside Bridge & Iron Co., Milwaukee.

300 **Tons**, Harleysville, Pa., Harleysville Mutual Insurance Co., to Bethlehem Fabricators, Inc., Bethlehem.

255 **Tons**, Denver, outlet pipe for Bonny Dam outlet works, St. Francis unit, Bureau of Reclamation, Denver, Spec. 2525, to Berkeley Steel Construction Co., Berkeley, Calif.

255 **Tons**, Elkhart, Ind., 2,000,000-gal. water reservoir to Graver Tank & Mfg. Co., Chicago.

225 **Tons**, Jackson Co., Ia., state highway Bridge S-1301-1 through Iowa Bridge Co., to Clinton Bridge Co., Clinton, Ia.

220 **Tons**, M spans for Santa Fe Railroad to American Bridge.

195 **Tons**, Homewood, Ala., football stadium for Jefferson Co., Board of Education, to Virginia Bridge Co., Birmingham.

120 **Tons**, Parlin, N. J., E. I. duPont de Nemours Co., to Bethlehem Fabricators, Inc., Bethlehem.

120 **Tons**, Scituate, Mass., elementary school through Vara Construction Inc., Boston, to West End Iron Works, Cambridge, Mass.

120 **Tons**, Chicago, miscellaneous construction at Douglas Airport, through Arcol Midwest Co., Chicago, Bennett Industries, Teitone, Ill.

100 **Tons**, Chicago, construction work at Douglas Airport, to General Bronze Co., Chicago.

• • • **Fabricated steel inquiries** this week included the following:

16000 **Tons**, Philadelphia, superstructure for Penrose Ave. bridge, Pennsylvania Dept. of Highways, due Apr. 29.

5000 **Tons**, Philadelphia, Jackson St. pier, City of Philadelphia, due Apr. 18.

2500 **Tons**, Kenova, W. Va., rebuild bridge No. 5129 for C. & O. Railroad.

2190 **Tons**, Ocean City, N. J., Seaside Heights bridge for State of New Jersey.

2000 **Tons**, Binghamton, N. Y., medical building No. 75 for State of New York.

1000 **Tons**, Menands, N. Y., warehouse for International Harvester Co., due Apr. 12.

990 **Tons**, Oakland, Calif., separation structures, Eastshore Freeway, California Div. of Highways, Sacramento, bids to Apr. 27.

575 **Tons**, Grand Junction, Colo., highway structures, State Highway 340, Denver State Highway Engineer, bids to Apr. 19.

185 **Tons**, Seymour, Conn., Wilbur Cross Parkway, reinforced concrete pavement and 2 steel plate girder bridges, one over Little River at Bank St., the other over Little River at Mill Pond. Bids due April 4. M. B. Pearce, New Haven, engineer.

• • • **Reinforcing bar awards** this week included the following:

145 **Tons**, Hudson, Wis., interstate bridge across the Mississippi to Industrial Contracting Co., Minneapolis.

• • • **Reinforcing bar inquiries** this week included the following:

600 **Tons**, Lexington, Mass., new high school.

315 **Tons**, Chicago, Augustana Hospital addition previously reported, has been abandoned.

280 **Tons**, Oakland, Calif., pavement and separation structures, Eastshore Freeway, California Div. of Highways, Sacramento, bids to Apr. 27.

170 **Tons**, Chicago, building for Illinois Institute of Technology, Sumner Sollitt Co., Chicago, low bidder.

165 **Tons**, Auburn, Calif., highway construction and overhead structures near Auburn, California Div. of Highways, Sacramento, bids to Apr. 27.

120 **Tons**, Grand Junction, Colo., highway structures, State Highway 340, Denver State Highway Engineer, bids to Apr. 19.

Transfers Plant Operations

Cleveland

• • • **Chicago Pneumatic Tool Co.**, after more than 50 years of operations here, will transfer its major operations to a new $5 million plant in Utica, N. Y., within the next few months.

Difficulty in finding additional factory space in Ohio was given as the reason for the transfer, which will affect about 1000 employees here.

Changes Casting Prices

Hamilton, Ohio

• • • **Hamilton Foundry & Machine Co.** is refiguring active jobs on a new basis and new castings prices will go into effect for casting shipments beginning Apr. 1, through June 30, according to an announcement by Peter E. Rentschler, president and treasurer of the company.

50 YEARS AGO

THE IRON AGE, *April 6, 1899*

• "In the Schenectady plant of the General Electric Co. the building which has most recently been equipped is known among the employees as "Number Eighty-three." That means it was the 83rd building to be erected at Schenectady by this company."

• **"The Pittsburgh Steel Foundry Co. were organized at Pittsburgh last week with a paid up capital of $250,000, the members of the new concern being some large capitalists of Pittsburgh."**

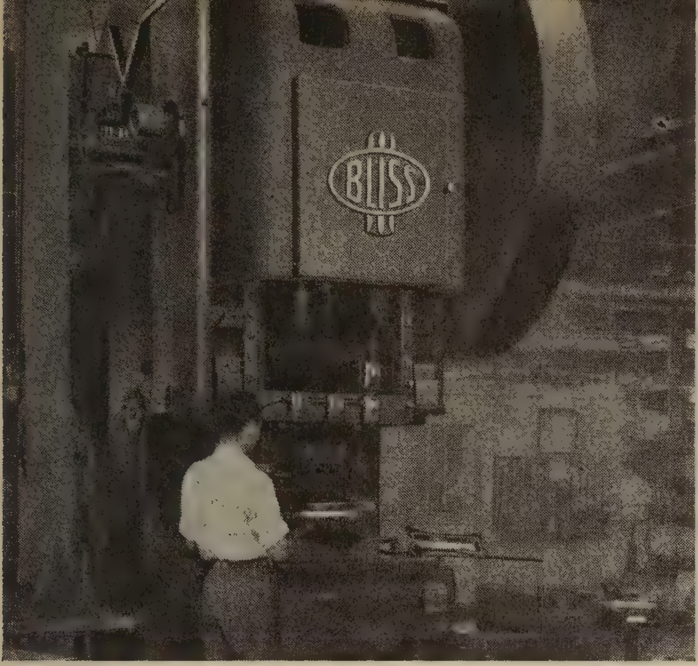
• "In some cases pure aluminum is not strong enough alone, and it is thought better to use an alloy containing about 6 pct of copper. This possesses a tensile strength of 14 tons psi, but this material is absolutely untrustworthy in sea water, owing to the rapid corrosive action set up between the two ingredients."

• **"The industrial world seem no longer to fear the competition of the Japanese, who aspire to be leaders of progress in the Far East, and whose workers are satisfied with wages that would mean starvation in America."**

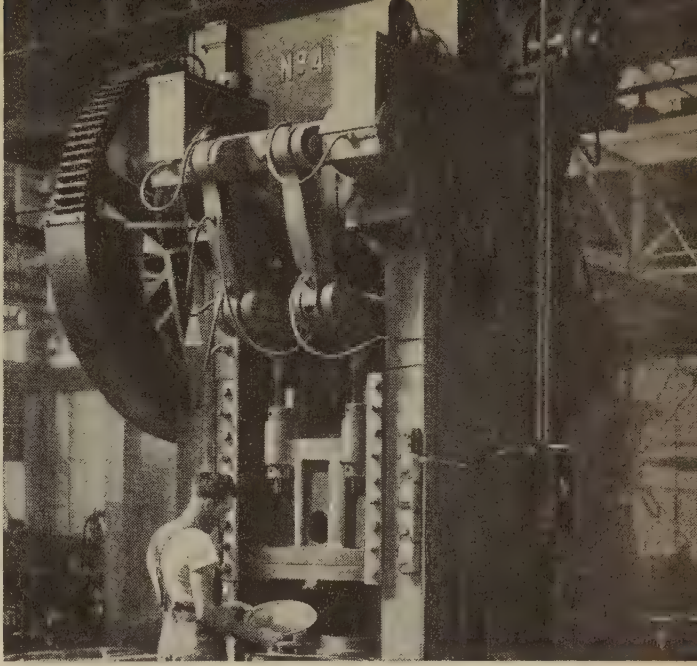
• "The Brown Hoisting and Conveying Machine Co. of Cleveland have commenced the erection of an ore unloading and storage plant of unusual size at the works of Nicopol-Mariopol Mining and Metallurgical Co. at Mariopol, Russia."

• **"Edward Brown of Philadelphia, has been a specialist for the last 30 years in the manufacture of pyrometers."**

• "The Ohio Tube Co. at Warren, Ohio, last week offered their employees an advance in wages of 10 pct which has been refused, the men demanded 15 pct."



Reservoirs for oil stoves are drawn in a Bliss No. 29 open back inclinable press equipped with Bliss die cushion. Material is 20 gauge steel .035. Main top of stove is drawn in a Bliss Double Crank Press—largest in the Florence Lewisburg plant.



One of several new Bliss toggle presses at the Florence plant forming a heater tank top. This No. 4 press is equipped with a die cushion in the bed which is used alternately for an additional forming operation or as a knockout, depending on the particular job.

PLANT GOES 100% BLISS

"Bliss Equipment gives us up to 50% more production"

—*FLORENCE OPERATIONS HEAD*

Here's how G. B. Colburn, vice president in charge of Florence Stove's Lewisburg operations, sums it up. "Experience at our Gardner plant, which was 60% Bliss-equipped, proved that Bliss presses gave us higher productivity per press with less 'down-time' for maintenance and repair. Our press runs are short, die-changeover is frequent with about 1100 dies in steady use, and the presses are worked hard. Bliss equipment gives us up to 50% more production. Many of our older Bliss presses are still being used for the operations for which they were originally bought—thanks to the assistance of Bliss engineers in selecting the right press for the job."

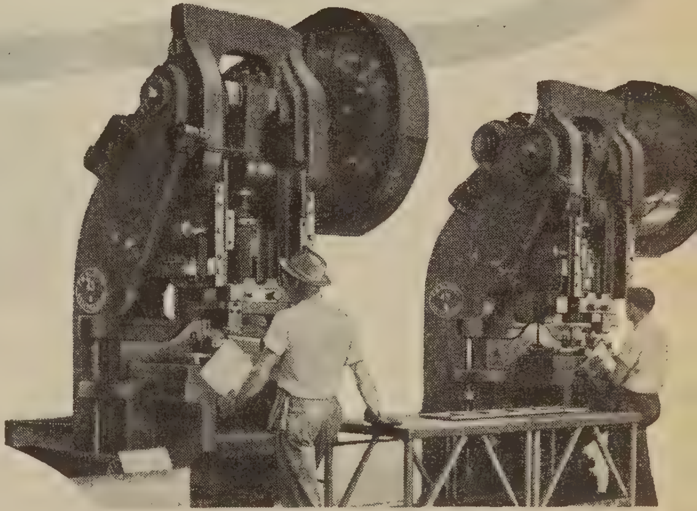
Add Florence Stove to the universal list of press users whose stamping lines are predominantly Bliss...who know that BLISS on a press is more than a name—it's a guarantee. You'll get the same dividends by putting your pressed metal problem up to Bliss.

See our catalog in SWEETS—or send for Bulletin 35B

E. W. BLISS COMPANY, DETROIT 2, MICHIGAN

Mechanical and Hydraulic Presses, Rolling Mills, Container Machinery

WORKS AT: Toledo, Cleveland, Salem, Ohio; Hastings, Mich.; Englewood, N. J.; Derby, England; St. Ouen sur Seine, France.



Bliss Adjustable Bed Presses trim front and rear corners on lift top covers—also perform many forming operations on other stove parts. Screw adjustable table gives wide range of shutheight.

Three of several dozen Bliss inclinable presses shown blanking a manifold clip and leg plate for oil stove.

For work that
no other metals can do!
W
Mo
Atomic Number 42
Density 10.2
Tensile Strength

Fansteel
Tungsten
and Molybdenum

Fansteel controls every step in metallurgical processing beginning with the ore.

Tungsten and Molybdenum are two of the most important refractory metals in electrical, electronic and mechanical industries. Their high melting points, low vapor pressure, resistance to arc erosion and great mechanical strength when combined with other metals intensify their values.

Both metals are used for electrical contacts, particularly in automotive ignition, vibrators, telegraph relays. They are components in the Fansteel Fastell® metals wherein their high resistance is combined with the electrical conductivity of silver or copper.

Heating elements in vacuum equipment—electric furnaces of temperatures 1600° C to 2000° C—on electrodes for inert gas welding and many other uses require Tungsten or Molybdenum.

Tungsten and molybdenum ores are refined to pure metal powder by chemical operations. Powders are compacted to ingots in a powerful hydraulic press. (above). Ingots are sintered in hydrogen atmosphere furnaces by heavy electrical current. (lower picture). Intense heat causes the powder particles to fuse into a strong solid mass without melting.

Why not investigate Fansteel Metallurgy for better service and possibilities of economy in *your* problems? Fansteel Metallurgical Corporation, North Chicago, Illinois, U.S.A.

PURE METALS
Tantalum, Tungsten, Molybdenum, and Columbium in sheet, rod, wire and special shapes and parts.
POWDER METALLURGY PRODUCTS
Finished or semi-finished shapes and parts of special analysis to achieve high strength, density, electrical conductivity, resistance to wear, impact, heat erosion, or combinations of these and other properties.
COPPER BASE ALLOYS
Copper alloyed with other elements, to combine high conductivity with strength, elasticity, resistance to heat, impact, or wear. Available in bars, rod, sheet, strip, castings, forgings, finished or semi-finished parts, for current-carrying springs and other parts, soldering tips, resistance welding electrodes, dies and fixtures.

11601-B

Fansteel
SPECIAL PRODUCTS
In Controlled Metallurgy

Changes Reported For Tin Conservation; Tin Consumers to Benefit

Washington

• • • **Numerous small changes** in tin conservation orders M-43 and M-81, designed to alleviate minor hardships among some groups of tin users and to provide additional domestic markets for "mill accumulations" of tinplate, were announced recently by the Office of Domestic Commerce.

It was emphasized that the adjustments do not involve any additional allocations of tin. Changes in industrial uses of the scarce metal, ODC officials explained, have resulted in some small undistributed stocks of pig tin and of low-grade secondary tin-bearing alloys, which now may be used for purposes and in quantities not previously permitted. The amendment of Allocation Order M-43 serves to direct these limited lots to the most needed uses, on an equitable basis.

Major changes in M-43 provide for:

(1) Increase in tin content of automobile body solders, from 15 to 22 pct.

(2) Increases in tin content of collapsible tubes for dentifrices, from 3 to 7½ pct; and in tubes for shaving creams and paste form cosmetics, from ½ to 3 pct.

(3) Tinning of flat copper base wire and strip, where a solderable coating is required for electrical connections.

(4) Tinning of steel wire for a number of uses, where difficulties in use of substitute coatings warrant the change. Among industries benefiting are food packaging, electrical, printing and publishing, textile.

(5) Increase in tin content of lead base coating alloys, to provide a solderable coating, and wider use of bolster metal in all cutlery.

(6) Limited use, on authorization by the Dept. of Commerce, of pig tin produced from low grade secondaries, for production of stannous chloride for general chemical use.

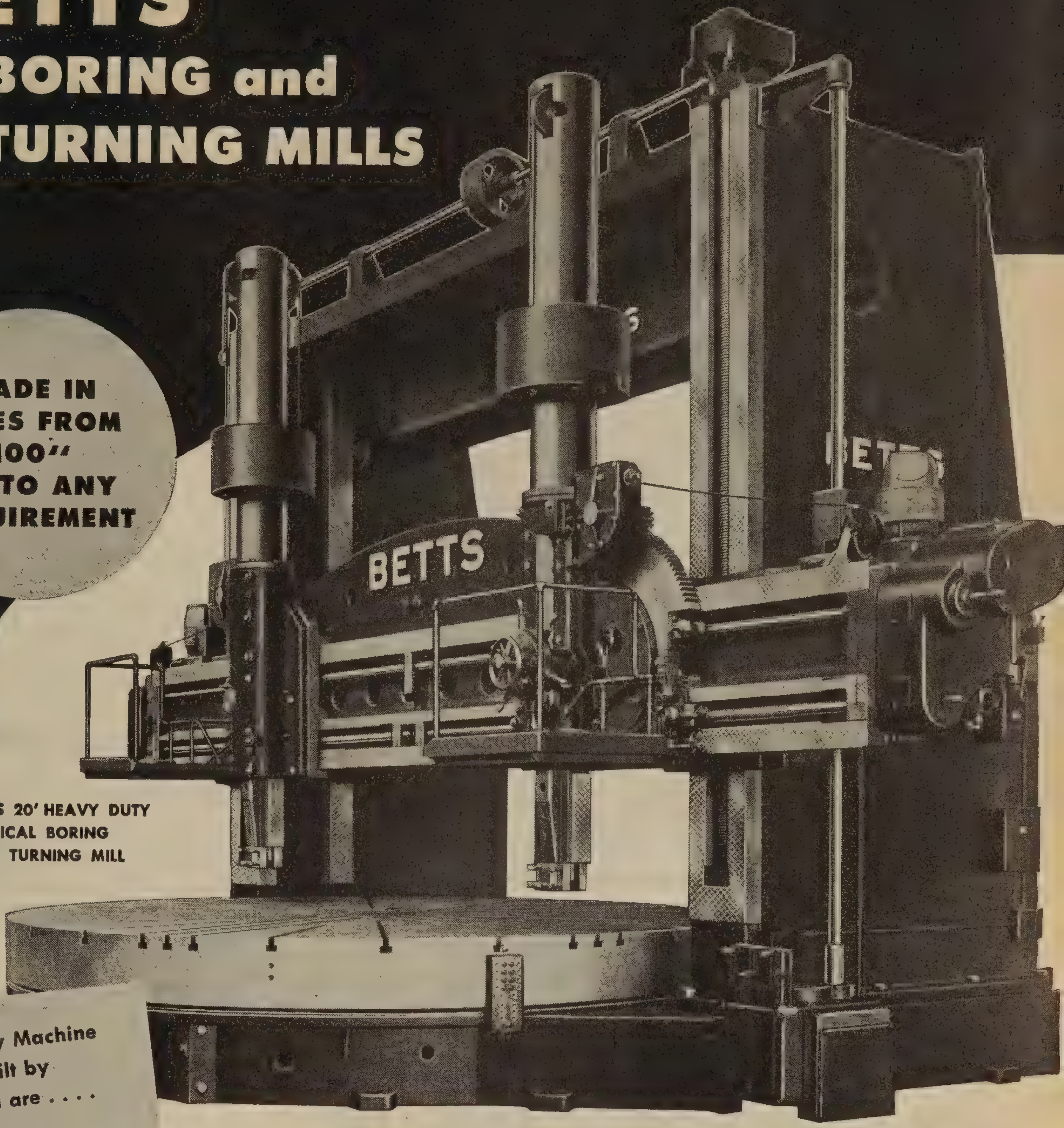
(7) Removal of limit on tin content of copper base alloys for certain specified uses.

(8) Use of terne plate for smoke pipe and fittings, flue jacket liners for hot water heaters, flashings, and for repair and replacement of existing tin and terne plate roofing.

Another revision of Allocation Order M-43 and changes in M-81 permit can manufacturers and others to use any "idle and excess" hot-dipped tinplate and "menders" (defective electrolytic tinplate sheets which have been mended by hot-dipping in tin), for all purposes for which the orders authorize use of 0.50 lb or heavier tinplate. Idle and excess electrolytic tinplate of any weight of coating, and "menders" hot-dipped in terne metal, may be used wherever the orders allow for tinplate or terneplate.

BETTS BORING and TURNING MILLS

MADE IN SIZES FROM 100″ UP TO ANY REQUIREMENT



BETTS 20′ HEAVY DUTY VERTICAL BORING AND TURNING MILL

Among Heavy Machine Tools built by Consolidated are . . . .

- LATHES
- BORING MILLS
- DRILL PRESSES
- MILLING MACHINES
- BORING MACHINES
- COLD SAW MACHINES
- BORING, DRILLING AND MILLING MACHINES
- DRILL AND TOOL GRINDERS
- PLANERS
- SLOTTERS
- RAILROAD SHOP TOOLS
- AUTOMOTIVE TOOLS
- AND OTHER SPECIAL MACHINES

Betts Heavy Duty Boring and Turning Mills are general purpose tools of simple, rugged design particulary adapted to heavy continuous operations requiring a high degree of accuracy combined with power. Among the outstanding features that have made Betts Mills leaders in their field, is their type of table mounting that insures positive concentricity. They are built in a size range from 100″ swing up to any size to meet your requirements.

Full information covering any size Betts Boring and Turning Mill in which you are interested will be furnished upon request.

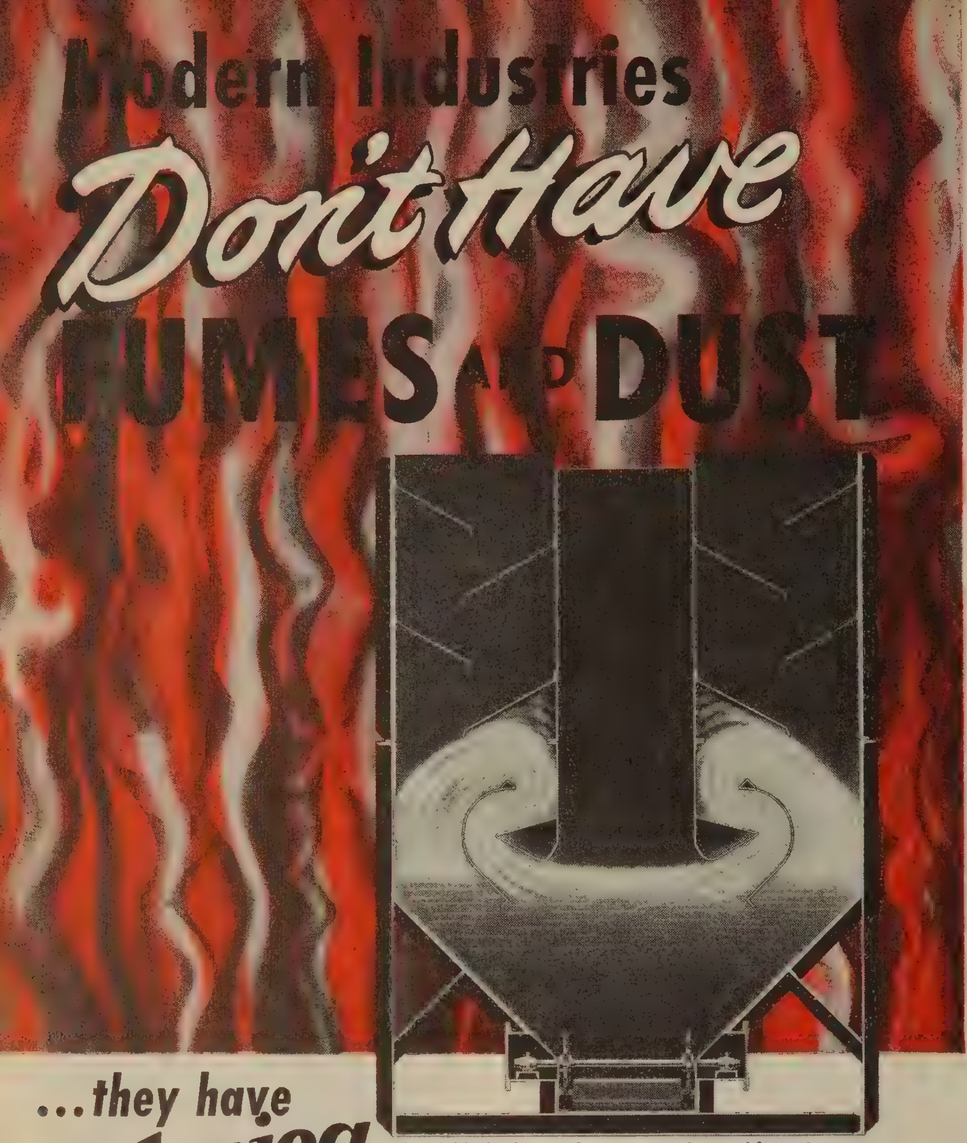
BUILDERS OF HEAVY DUTY MACHINE TOOLS SINCE 1848

BETTS • BETTS-BRIDGEFORD • COLBURN • HILLES & JONES • MODERN • NEWTON • SELLERS

CONSOLIDATED

MACHINE TOOL CORPORATION

ROCHESTER 10, NEW YORK



...they have
Schmieg
CENTRI MERGE

Available both as a floor-mounted type (shown) or an overhead installation. Complete with a motor-driven sludge removal conveyor, where required.

AUTOMATIC ELIMINATION
from Collection to Disposal

Operators of modern plants have long since learned the economy of ridding their shops of destructive dust and smoke fumes. Men who work in plants free of these health hazards feel better, work better, produce more. And the accident rate is lowered. In actual plant operation, the Schmieg CENTRI-MERGE method of dust and fume elimination has shown marked advantages over any other system. Dust and fumes are collected *immediately they occur*—shot back on a stream of air through ducts to the Collection Unit. In the washing chamber of this unit—a veritable tornado of seething, churning water-dust is washed and scrubbed from the air and flooded into the sludge tank below, permanently trapped under water. Fumes go out the exhaust. AUTOMATIC operation from start to finish.

If you are interested in learning why the CENTRI-MERGE method is so highly endorsed by plant owners and how its application can so greatly benefit your own operation, our engineers are prepared to give you some eye-opening information on dust and fume elimination—without obligation, of course.

THE *best* AIR PURGE *is* CENTRI MERGE

Schmieg INDUSTRIES INC.
Engineers & Manufacturers

296 PIQUETTE AVENUE • DETROIT 2, MICHIGAN

Recommends Changes In Mineral Leasing Laws; Mineral Patent System

Washington

• • • **If Congress** sees fit to adopt recommendations of the Hoover Commission, it will be much easier in the future to stake out and prove a mining claim on government land.

The mineral patent system has not been changed since it was enacted in 1872 nor have there been changes in the mineral leasing laws since 1920. Patented claims have dropped from a rate of 2500 annually around the 1905 period to a current 100.

Specifically, the Commission urges that responsibility for mineral exploration, leasing and patenting of claims on public lands be turned over to the Geological Survey. Mineral claims would then be permitted to be staked on public reserved and unreserved lands with certain exceptions such as national parks.

Further, it is urged that the government recognize the validity of such claims without requiring that valuable minerals first be actually discovered. Also, "sufficient" time would be provided for discovery.

It is also proposed that present requirements regarding assessment work be modified or eliminated under stated conditions.

Such changes, it was stated, would encourage the exploration and development of mineral resources within the public domain.

Sees 5½ Million Car Year

Des Moines, Iowa

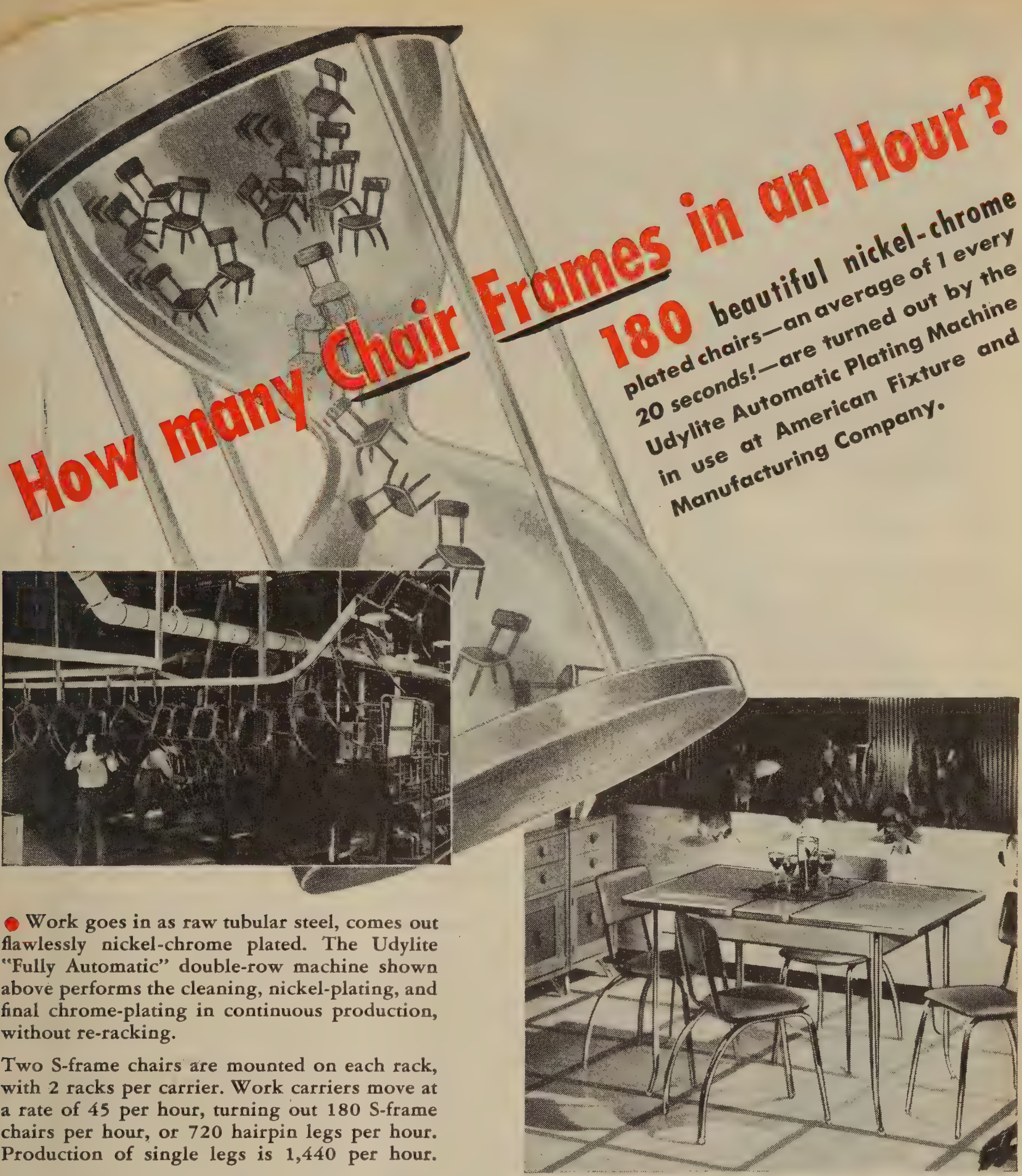
• • • **Ford Motor Co.** experts estimate the potential domestic market for cars and trucks is a minimum of 5½ million in 1949.

Ford's sales department estimates 3 million prospects for cars were "left over" from 1948. In addition, according to L. W. Smead, assistant general sales manager of the Ford Div., as of July 1, 1948, there were 7.5 million cars in operation 12 years old or older and 1.5 million trucks at least 12 years old.

Other factors tending to strengthen the market for new cars in Mr. Smead's opinion are:

How many Chair Frames in an Hour?

180 beautiful nickel-chrome plated chairs—an average of 1 every 20 seconds!—are turned out by the Udylite Automatic Plating Machine in use at American Fixture and Manufacturing Company.



● Work goes in as raw tubular steel, comes out flawlessly nickel-chrome plated. The Udylite "Fully Automatic" double-row machine shown above performs the cleaning, nickel-plating, and final chrome-plating in continuous production, without re-racking.

Two S-frame chairs are mounted on each rack, with 2 racks per carrier. Work carriers move at a rate of 45 per hour, turning out 180 S-frame chairs per hour, or 720 hairpin legs per hour. Production of single legs is 1,440 per hour.

Here is the answer to *your* quest for greater output, lower manufacturing costs, and better utilization of manpower. Write today for further information—describe your product and process—and we will promptly supply detailed recommendations, without cost or obligation to you. *The Udylite Corporation, Detroit 11, Michigan.*

PIONEER OF A BETTER WAY IN PLATING

THE
Udylite
CORPORATION

TESTED SOLUTIONS • TAILORED EQUIPMENT • AUTOMATIC CONTROL IN METAL FINISHING

NEWS!
ABOUT:
Cutting Costs! Improving Products!

WITH ULTRA MODERN
PERMACLAD
STAINLESS CLAD STEEL

The Clad Steel That's Truly Corrosion Resistant! Easily Formed or Deep Drawn!

The Finer the Finish,
The Finer the Product
For the Finest Finish
Use PERMACLAD

Does the material you are now using cost too much for you to fabricate your product from it profitably? Then learn the advantages of using Permaclad, the ultra modern Stainless Clad Steel. Permaclad combines the surface characteristics of Stainless Steel with the forming qualities of Carbon Steel. It has excellent cold forming properties. Shower stalls, bar-room rails and many other products are now being made of Permaclad.

It will pay you to get complete information about this corrosion resistant, cost-saving steel now. Free literature on request. Alan Wood Steel Company, Conshohocken, Pennsylvania. Dept. P-19.

PERMACLAD
STAINLESS CLAD STEEL

ALAN WOOD STEEL CO. ESTABLISHED -AW- 1826 CONSHOHOCKEN, PA.

A Product of **ALAN WOOD STEEL COMPANY**

Other Products: *AW Super Grip Abrasive Floor Plate AW Super-Diamond Floor Plate • Billets • Plates • Sheets (Alloy and special grades).*

(1) there are 6 million more families in this country than there were in 1940; (2) 12 million more people are employed; (3) individual savings are three times greater than 1940.

Wildcatting Hits Detroit

Detroit

• • • **During the** past month eight Detroit automobile plants have been hit by a flurry of wildcat strikes which have temporarily idled nearly 30,000 workers.

Hudson has been hit by eight stoppages. Next to Hudson, Chrysler, Briggs and Midland Steel, which makes frames here, have been most seriously affected.

Union spokesmen have charged that overstocked car producers have deliberately precipitated the strikes to avoid mass layoffs of workers. Management insists the strikes are entirely without provocation.

The introduction of new plant machinery appears to be a factor in the disputes. While management insists the new equipment is essential to the production of new models, labor charges the machines are only an excuse for getting a little more work out of each employee so that prices can be cut without reducing profits.

Most Detroit sources look for more of the same as long as the present uncertainty about the automobile market continues.

Canada's Steel Imports Up

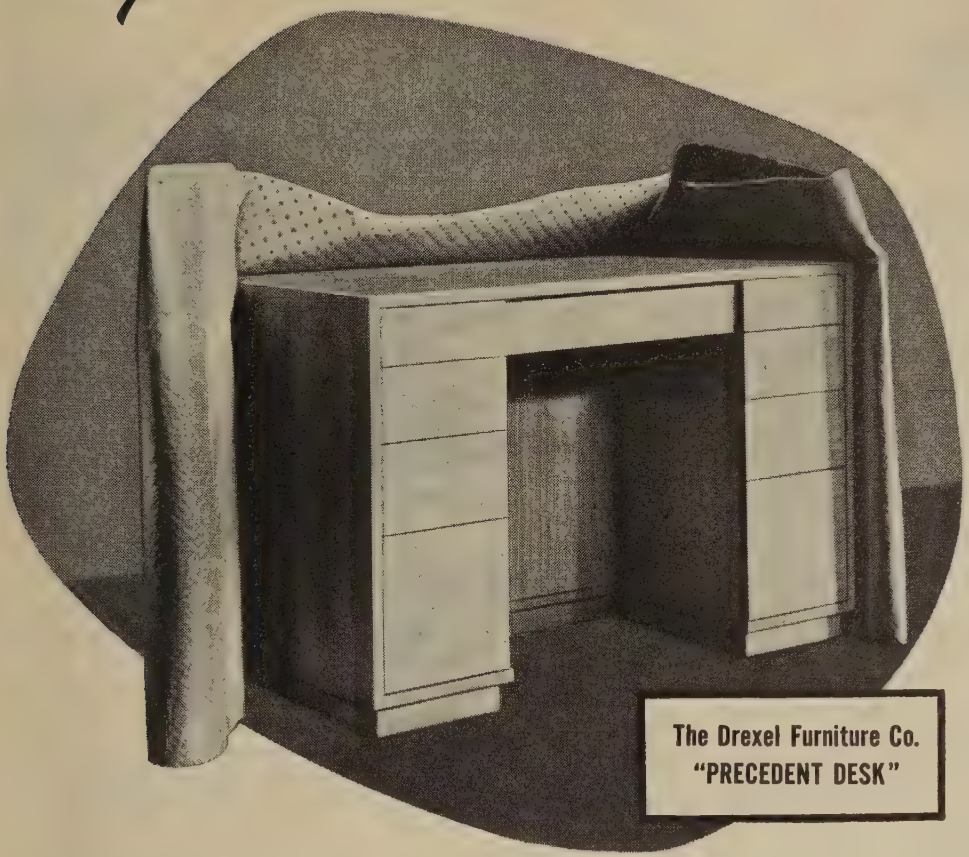
Toronto

• • • **During** 1948 Canadian iron and steel imports, all classifications, totaled 990,263 net tons, of which 949,078 tons were primary forms of carbon steel; 35,292 tons of alloy steel and 4893 tons of stainless steel.

Of the total imports 896,870 tons of carbon steel, 34,374 tons of alloy steel and 4741 tons of stainless steel came from the United States, while 52,208 tons of carbon steel, 918 tons of alloy steel and 152 tons of stainless steel were imported from all other countries.

For the past year Canadian mills produced a total of 3,037,781 tons of carbon and 173,848 tons of alloy steel ingots and castings.

Kimpak Float Packaging*



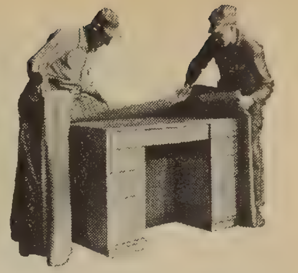
Cuts shipping costs— reduces damage in transit!

KIMPAK* offers revolutionary advantages to help solve your packaging problems. It provides a more effective cushion against shock than most bulkier materials. What's more, the neat, compact rolls are so easy to apply, so light in weight, it's more economical to use.

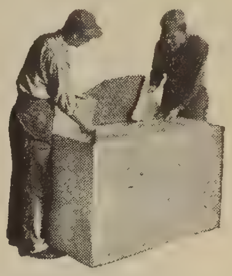
KIMPAK looks smart—adds to the eye-appeal of your product. It's clean, odorless, safe to handle, too. And KIMPAK protects against scratching, chafing or pressmarking, so finely finished articles are assured of safe delivery.

Try "Float Packaging" at your first opportunity. Whatever the job—KIMPAK will do it. In fact, there is a specification of reliable KIMPAK to meet every requirement of the four basic methods of Interior Packaging . . . Surface Protection, Flotation Packaging, Blocking and Bracing, and Absorbent Packaging.

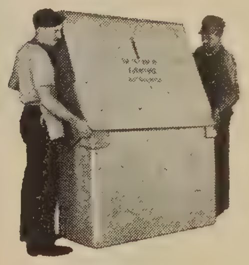
VISIT OUR BOOTH at the National Packaging Exposition, May 10-13, 1949, Atlantic City, New Jersey, Space No. 320.



1. Thick blanket of Type 500 KIMPAK, backed with Kraft paper, is wrapped completely around the Drexel Precedent desk.



2. KIMPAK guards all finished surfaces from damage by scratching, rubbing and pressmarking.



3. After KIMPAK is taped securely in place, the corrugate shipping container is fitted over the wrapped desk.

4. Completely packaged, the desk is now safely protected against the hazards encountered in handling, storage and shipping.

All photographs courtesy of Drexel Furniture Co., Drexel and Morganton, North Carolina.

Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

A PRODUCT OF Kimberly Clark RESEARCH

CREPED WADDING

*T. M. Reg. U. S. & Can. Pat. Off.

FREE BOOKLET

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Please send me free, the illustrated KIMPAK packaging guide.

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Set your Sights on Salability—and Profits

Have you a product problem—that may need help when selling gets a little spotty? If so, you'll want to know how *pre-coated* Thomas Strip can help you stimulate sagging sales—and profits—by (1) cutting your costs, and (2) improving your product.

Ready-to-fabricate Thomas Strip streamlines production and cuts costs all along the line. It combines the utility and beauty of nickel, copper, brass or zinc coatings with the economy of steel—gives your products the definite competitive advantages of favorable unit costs, smart appearance and lively consumer acceptance. In short, the snap and sparkle of gleaming Thomas metallic coatings often transform lack-lustre products into brisk best-sellers. Cost-cutting, product-improving details are listed below.

THE THOMAS STEEL COMPANY
WARREN, OHIO
Specialists in Cold Rolled Strip Steel

Electrocoated with Zinc, Copper, Nickel and Brass • Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Spring Steel • Alloy Strip Steel • Produced to Your Specifications

Thomas Strip
COLD ROLLED
STRIP
STEEL

Fabricates Readily—Adds Eye-Appeal

Sees Lower Quotations For Nonferrous Scrap

Chicago

Scrap dealers from all over the country gathered here at the Stevens Hotel March 21 through 23 for the 36th annual convention of the National Assn. of Waste Material Dealers. Although there were technical meetings scheduled primary interest concerned today's market.

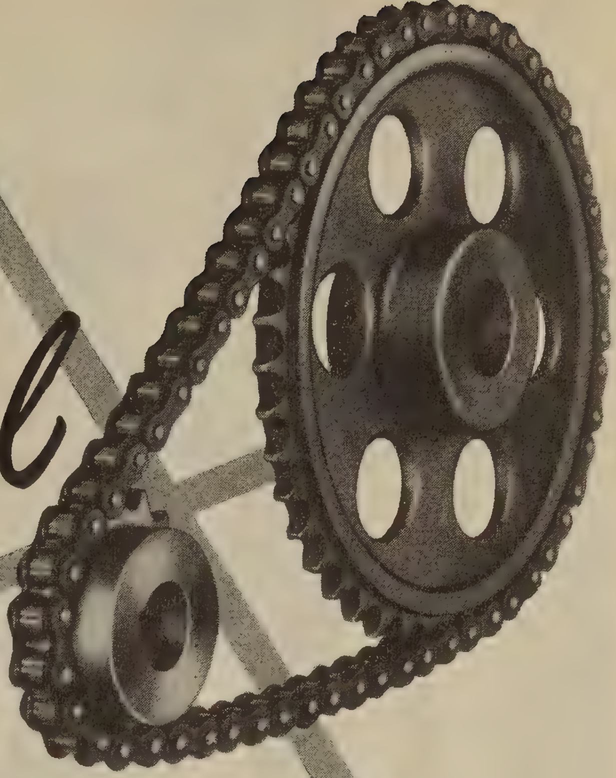
The most popular discussions in the hotel lobbies and various rooms of those attending the convention were about the softness of the nonferrous metals. Consensus was that lead and aluminum scrap may decline even further. A lot of the dealers still cannot understand what keeps the primary prices of these metals up so high when scrap has fallen as much as 75 pct from last year's high.

Sidney Danziger, president of the National Assn. of Waste Material Dealers expects nonferrous metal scrap prices to level off at about 25 pct under last year's peak. Mr. Danziger and some of the other dealers present expect the market to climb back out of its present low before the year is over.

Another popular subject discussed by the dealers was government stockpiling. Many of the dealers expressed the opinion that this program of critical metals has been an important prop under prices in the metal market. The extent of future government purchase programs are in doubt, nobody is sure how the general stockpiling plan will affect metal markets for the balance of the year.

The association is pushing several programs which it is believed will benefit the industry. One is a better set of specifications for grading scrap metals. Details of such specifications are being worked out between the metal dealers and the mills that buy the scrap. Another program is that inducing young men, particularly war veterans, to start apprenticeship courses in the industry. The association has a very active committee pushing this program. This committee reported to the Metals Div.'s general meeting that they have high hopes for getting the government to include the jobs as

standard *yet special*



MORSE ROLLER CHAIN DRIVES

MORSE ROLLER CHAIN, made in American manufacturers' standard sizes, to standard dimensions as approved by the A.S.M.E and A.G.M.A., is *more* than standard in performance.

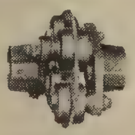
Its extra ruggedness, high efficiency, and dependable service have stamped it in the minds of designers and engineers as extra special for better mechanical power transmission.

Available in single and multiple widths, with pitches from 3/8″ to 2½″, Morse Roller Chain represents the result of engineering skill applied to a practical knowledge of chain design.

You get low-cost, positive, efficient, flexible chain drives for your mechanical power transmission with Morse Roller Chain. For complete information, write Dept. 333, Morse Chain Company, Detroit 8, Mich.

MORSE CUT TOOTH SPROCKETS

Morse Cut Tooth Sprockets, accurately machined for top performance, are recommended for use with Morse Roller Chain. There's no divided responsibility for chain drive performance when you get both chain *and* sprockets from Morse.



Morse Morflex Coupling

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MECHANICAL
POWER TRANSMISSION
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A PRODUCT OF
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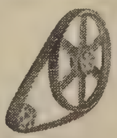
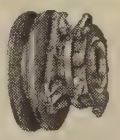


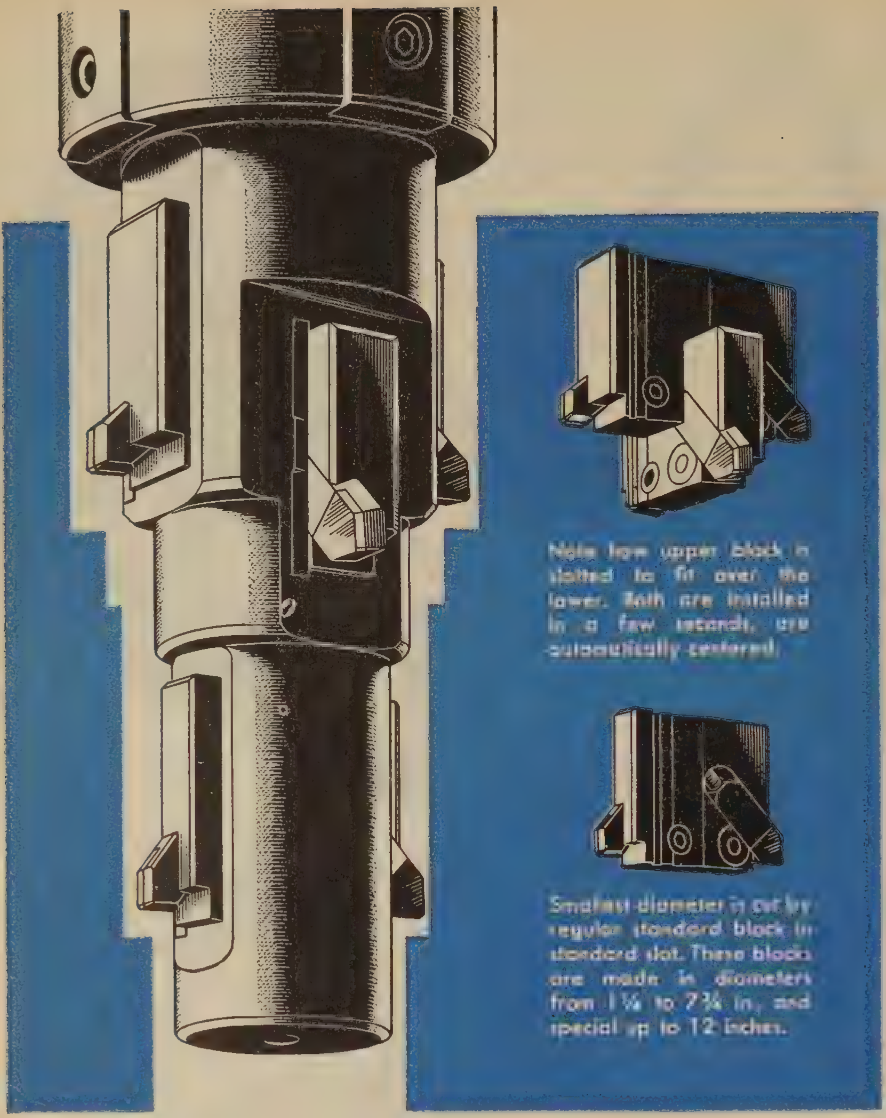
Morse Silent Chain Drives



Morse-Rockford Clutches

Morse-Rockford Pullmore Clutches

MORSE CHAIN COMPANY DETROIT 8, MICHIGAN



Note how upper block is slotted to fit over the lower. Both are installed in a few seconds, are automatically centered.

Smallest diameter is cut by regular standard block in standard slot. These blocks are made in diameters from 1⅛ to 7¾ in., and special up to 12 inches.

Gairing Boring Tools Boost Production

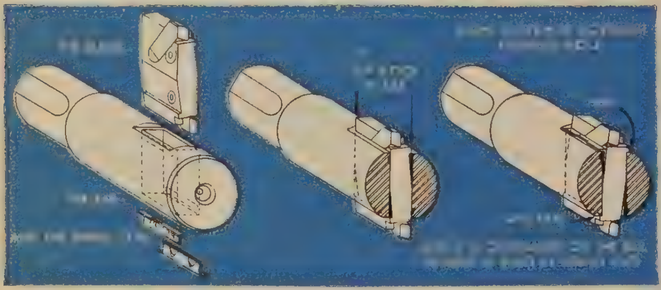
Quick-Change Blocks Save Man-Hours and Down-Time

Held in the boring bar without locating holes and screws, only GAIRING STANDARD BORING BLOCKS can be used in such applications as shown above.

The operation consists of boring diameters of 2.693, 2.228, and 1.875 inches in a tractor drive housing, cutting cast iron at a surface speed of 200 F.P.M., 0.020″ feed per revolution.

Here, as always, blocks are pre-set to size, perfectly self-centered; always positively locked, rigidly driven. They are used extensively for rough boring as well as for semi-finishing and reaming operations.

Let us show you how GAIRING BORING BLOCKS may be applied to your problems.



Write today for the Gairing Block-Type Boring Tool Catalog

THE GAIRING TOOL COMPANY, 21224 HOOVER ROAD, DETROIT 32, MICH.

classified and as skilled rather than unskilled. If they are successful in this it will mean that metal dealers will be able to take in war veterans for apprenticeship work in their yards, and as part of the general program the government will help sponsor and pay salaries of these men.

Reports Record Tonnage

Depew, N. Y.

• • • **The Symington-Gould Corp.** reported its local plant achieved the greatest production tonnage record last year since 1929. The record was made possible, the company said, "by modernization of facilities, improved methods and some diversification of products."

As part of its diversification program, the Depew plant is making steel ingots in addition to its principal line of railroad castings. The ingots are for automobile manufacturers, who have them custom rolled into sheets.

The company reported 1948 net profit of $282,404, equal to 28¢ a share, after taxes and deduction of a nonrecurring loss in connection with the sale of its Rochester plant, which was closed in the spring of 1948. Net sales for 1948 totaled $15,461,131. Earnings in 1947 were $148,561, or 15¢ a share, and net sales were $12,245,659.

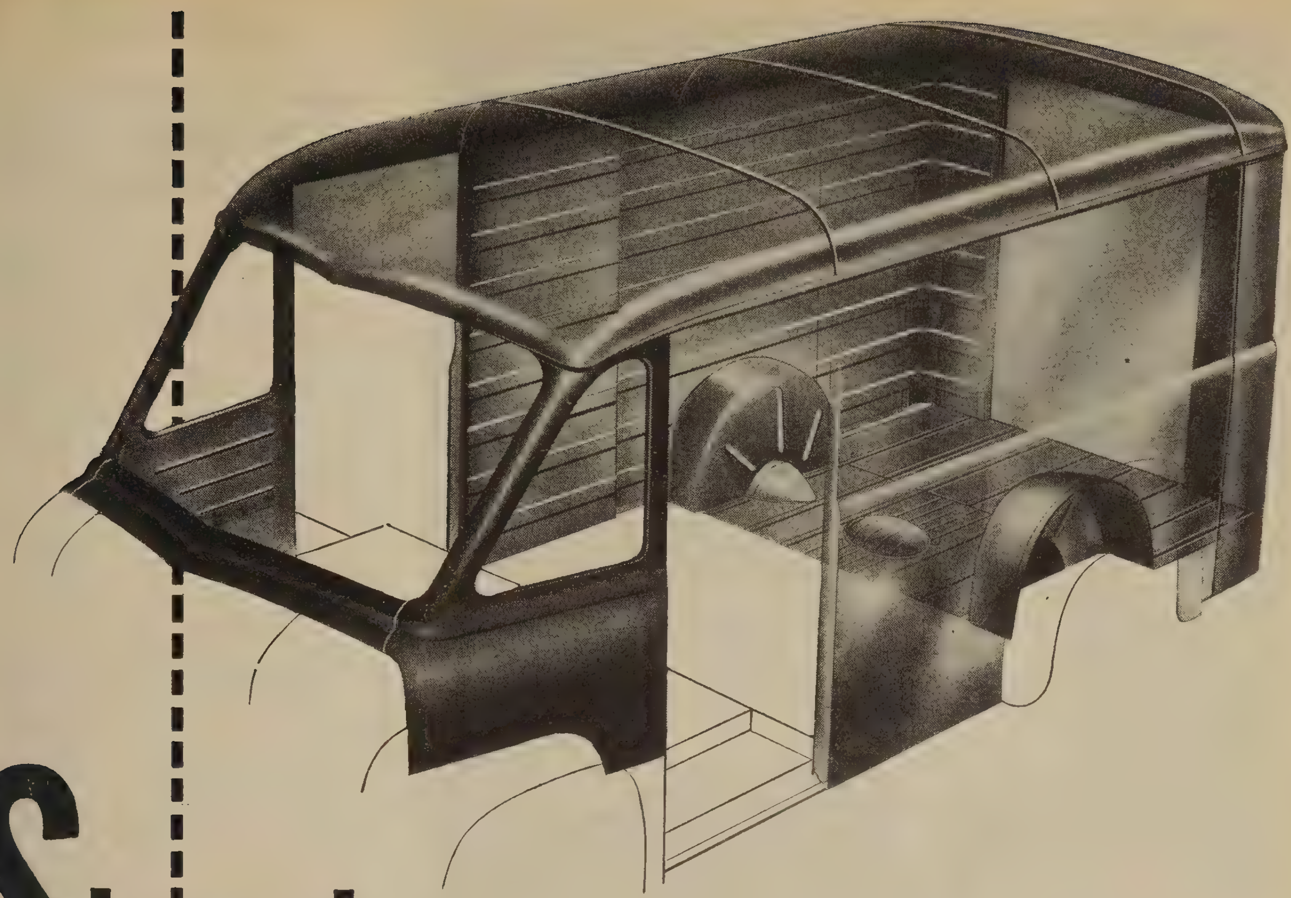
Salaries and wages declined to $5,573,289 in 1948 from $6,019,609 in the preceding year.

WAA Offers Forge Works

Cincinnati

• • • **The Cincinnati Region**, WAA, is offering for sale or lease the only remaining surplus operating forge works in the 4 state area which includes the major part of Ohio and Indiana, all of Kentucky and western Pennsylvania. This property is located at 3695 E. 78 St., Cleveland. Sealed bids will be accepted by the WAA Office of Real Property Disposal, 704 Race St., Cincinnati, until 3:00 p. m. (EST) Apr. 15, 1949.

Interested prospective buyers are urged to make an appointment for the inspection of this property at which time a WAA representative will be assigned to explain the merits of the property and the condition of sale or lease.



Shapely

ISN'T SHE?

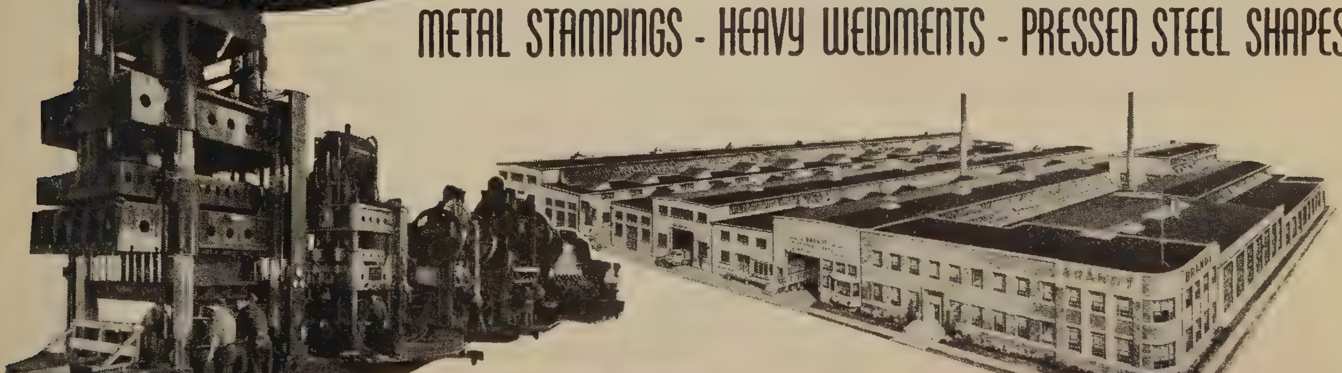
WHEN IT'S GOTTA FIT–

That goodlooking shape you see represents a composite of heavy automotive stampings. "She's" a picture of the parts now being turned out on Brandt's precision mass production line for one of America's largest automotive manufacturers. A battery of huge presses, a plant equipped to meet exacting specifications and rigid delivery schedules at distant assembly lines, these plus skilled workmanship are serving industry at Brandt. Ample stockpiles, complete engineering, transportation and expanded production facilities combine to make Brandt a strategic "extra plant" when you need it. At Brandt, all inquiries are handled from receipt to quotation by the Engineering Department. We invite *your* inquiry.

BRANDT BALTIMORE *measures up!*

TO EXACTING METAL WORKING SPECIFICATIONS

METAL STAMPINGS - HEAVY WELDMENTS - PRESSED STEEL SHAPES



CHARLES T. BRANDT, INC. 1700 RIDGELY ST. BALTIMORE 30, MD.

One of the important time-saving characteristics of this Moore Rapid Lectromelt furnace is the unique four point roof suspension. The tilted position of the size OPT Lectromelt furnace shows this construction principle advantageously. This system makes the removal, replacement and alignment of the roof very easy and very quick. The roof ring is suspended from sturdy outrigger arms by means of especially designed screw operated clips under the ring's top angle and supported at four points. This type of construction also securely locks the roof and superstructure in place.

Moore Rapid Lectromelt Furnaces are available in capacities ranging from 250 pounds to 100 tons. For full details, write today for the Lectromelt catalog.

PITTSBURGH LECTROMELT FURNACE CORP.
PITTSBURGH 30, PA.

MOORE RAPID
Lectromelt
FURNACES

manufactured in: CANADA, Lectromelt Furnaces of Canada, Ltd., Toronto 2; ENGLAND, Birlec, Ltd., Birmingham; SWEDEN, Birlec Elektkougnar A/B, Stockholm; AUSTRALIA, Birlec Ltd., Sydney; FRANCE, Stein et Roubaix, Paris; BELGIUM, S. A. Belge Stein et Roubaix, Bressoux-Liege; SPAIN, General Electrica Espanola, Bilbao; ITALY, Forni Stein, Genoa.

Report on Hot-Rolling Of Titanium Powder By Bureau of Mines

Washington

• • • **Successful** compacting of loose metal powders into useful metallic forms, and preliminary experiments on titanium-nickel alloys, are described in two separate reports of investigations released by James Boyd, Director of the Bureau of Mines.

Titanium, which ranks fourth among metals suitable for engineering purposes, is active chemically and at high temperatures reacts readily with the atmosphere. This characteristic makes it extremely difficult to produce a pure metal by melting and casting as with other metals, according to the Bureau reports. However, the Bureau developed a process in which titanium powder can be heated to elevated temperatures while sealed in ductile, gastight containers. Hot-rolling the complete assembly produces a solid, nonporous metal for working into construction members, machinery parts, and many other materials.

In connection with the sheath-working of titanium powder, Bureau research was expanded to include certain other metal powders as well as alloys of titanium. As a result, the process was successfully applied to powders of chromium, tantalum, tungsten, molybdenum, beryllium, cobalt, iron, and nickel.

As a natural result of research on pure metallic titanium, Bureau metallurgists also are investigating the possibilities of titanium alloys for engineering purposes since pure metals in general show relatively large improvements in properties when alloyed with other metals. The titanium-nickel series is the first of several alloys to be tested in Bureau laboratories. The report on this research describes experiments on alloys containing up to 40 pct nickel.

Copies of either of the reports, R.I. 4463, "A Tentative Titanium-Nickel Diagram," or R.I. 4464, "Sheath Working of Metal Powders," may be obtained free by writing to the Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa. The publication or publications requested should be identified by number and name.

Exit! Dirty Foundry Work

Birmingham

• • • "Labor-serving" devices are eliminating much of the "hard, hot, dirty work" associated with old-type foundries, Lester B. Knight, Chicago consulting engineer, told the Birmingham Chapter, American Foundrymen's Society.

Mr. Knight, president of Lester B. Knight & Associates, Inc., said use of these devices has resulted in greater unit production per manhour, thereby increasing the workman's take-home pay without substantially boosting the cost of his product.

In addition to the use of "labor-serving" devices, modern foundries are making use of proper lighting and ventilation, the consulting engineer asserted.

Mr. Knight warned, however, that some foundries tend to "over mechanize," causing a decrease in flexibility and forcing costs up as volume of business drops.

Canadian Construction Up

Toronto

• • • **Canadian construction** contracts awarded for the first 2 months this year were 75 pct ahead of the like period last year. Total value of contracts awarded amounted to $136,115,100 as compared with $77,162,900 for the first 2 months of 1948. For February construction awards amounted to $63,322,700 which is upwards of $20 millon above those for February last year.

A-L Stabilizes at Buffalo

Buffalo

• • • **Operations of** the Allegheny Ludlum Steel Corp. plant in River Road have been stabilized at about 70 pct of normal for 1947 and 1948, a company spokesman said last week.

The plant, which makes alloy steel castings, laid off about 50 workers shortly before Feb. 1 and now has about 125 on the payroll, all of whom are working a full week.

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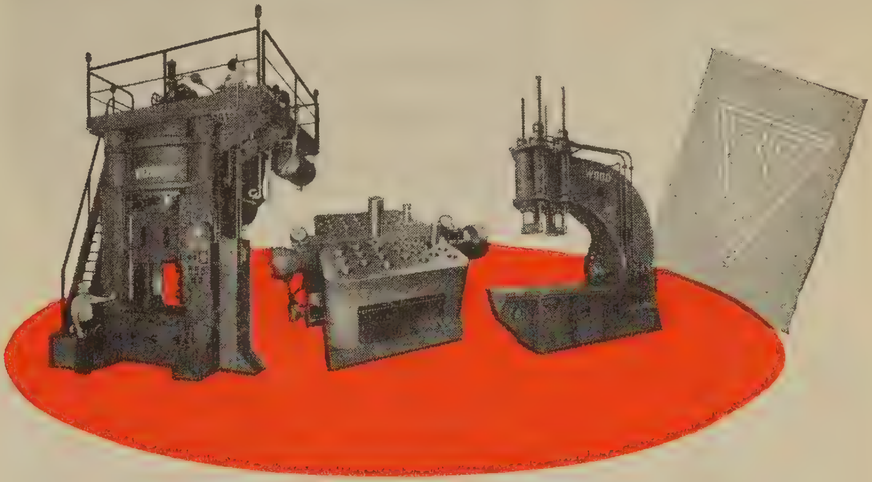

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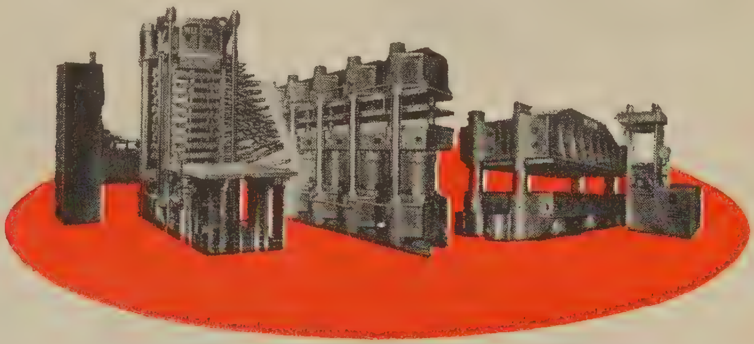

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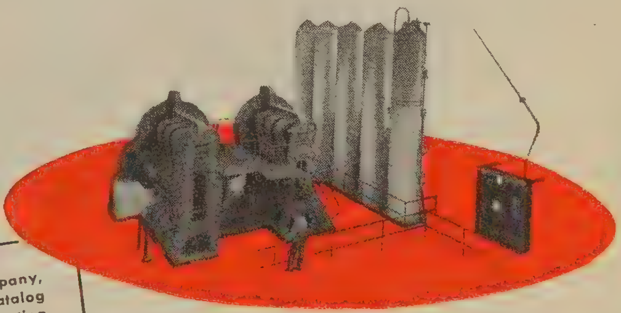

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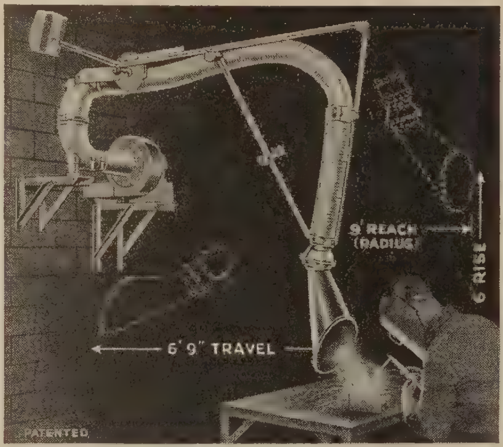

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Space Heaters Improve Paint Shop Operations

Pittsburgh

• • • **Installation of** four gas-fired, high velocity warm air space heaters solved several problems involved in the spray painting of railroad cars during cold weather last winter at Greenville Steel Car Co., Greenville, Pa.

The paint shop is located in part of a large brick structure 735 ft long and 250 ft wide. It has a dirt floor and the roof, 18 ft high, is of wood and tar paper. The building never had been equipped with a heating system since it was erected about 30 years ago.

Boxcars, gondolas, hoppers and special type cars are fabricated in other buildings and remain outdoors until scheduled for painting. Frequently the metal surfaces of the cars are covered with frost, ice or snow when moved into the paint shop. In the past, this made the painting operation extremely difficult. When the outdoor temperature was below freezing, paint congealed in the spraying equipment. Special cold-weather mixtures had to be used.

The four Dravo "Counterflo" direct - fired heaters, however, maintained an average of 45°F (at zero outdoors) in the painting department of the huge building. As a result, considerable time was saved in the painting operations because the delays previously encountered during cold weather were eliminated. Standard paint mixtures were used even when the outdoor temperature dropped to —25°F.

Appoints New Chairmen

New Haven, Conn.

• • • **Joseph A. Schiavone,** of Michael Schiavone & Sons, Inc., here, has been appointed chairman of the Eastern Div. of the Yard Dealers committee of the Institute of Scrap Iron & Steel Inc. by Edward L. Solomon of Pittsburgh, who is president.

Joseph Cohen, General Scrap Iron, Inc., Providence, has been named cochairman of the committee.

Henry Koplin, Macon Iron & Paper Stock Co., Macon, Ga., has been appointed chairman of the Southern Div. of the Yard Dealers committee.

Receives Safety Award From NSC for Record Number of Manhours

Cleveland

• • • **American Works,** American Steel & Wire Co., which has rolled up a record of more than 3 million man-hr worked without a lost-time accident, was honored by the National Safety Council at a ceremony Mar. 30, it was announced by H. B. Jordan, vice-president in charge of operations.

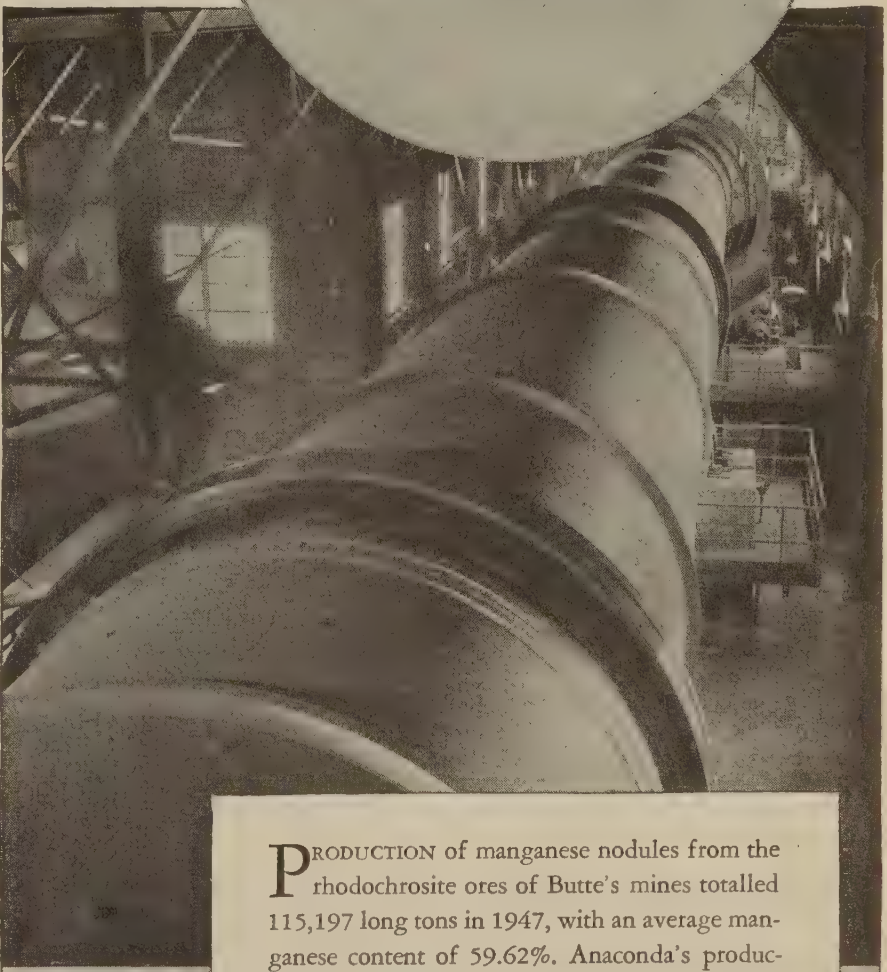
The council's Distinguished Service Award was presented by Judge Lee E. Skeel, president, Greater Cleveland Safety Council, representing the National Council, to H. W. Hartman, superintendent of the plant.

Special recognition was given to the six members of the joint labor-management safety committee at the plant, of which R. D. Cross, supervisor of safety and works protection, is chairman. Other members are F. G. Mog, master mechanic, F. A. Kearns, superintendent of fine wire, and three labor representatives, all officers of Local 1519 United Steelworkers—CIO. They are Harry Marsh, treasurer; Howard Harbaugh, Jr., vice-president and grievance committeeman, and James Collingwood, recording secretary.

Others participating in the ceremony were A. J. Hoyt, Cleveland district manager of operations, and E. O. Kumler, company assistant director of industrial relations, in charge of safety.

"The Safety Council award is being made to American Works on the basis of the period from June 23, 1947, to Nov. 5, 1948, during which the manhours worked without accident reached a total of 2,622,580," Mr. Jordan said. "We are highly gratified that this record has been maintained to the present date, which brings the 'no accident' period up to 634 days, with 3,164,750 man-hr.

"This record has been made possible by the constant effort and vigilance of every one of the 955 men and women employed at American Works. It reflects the kind of achievement that is possible when safety is made the number one consideration. Records show that our workers are safer at American Works and in our



Anaconda
MANGANESE
NODULES

PRODUCTION of manganese nodules from the rhodochrosite ores of Butte's mines totalled 115,197 long tons in 1947, with an average manganese content of 59.62%. Anaconda's production is the principal U.S. source of supply for producers of ferro-manganese and other consumers of metallurgical grade ore.

Illustrated above is the 270-foot kiln at the Anaconda Reduction Works in which the manganese concentrates are sintered at a temperature of 2600° F.

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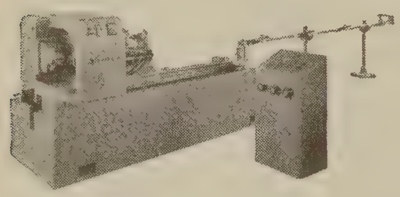

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other plants than in their own homes or in their automobiles."

An intensive safety program has been carried on throughout the company for years under Mr. Kumler's direction, Mr. Jordan pointed out.

"Our Joliet, Ill., Works has been nominated for a Safety Council award for its 134-day record of 1,898,000 man-hr without accident. Our Blast Furnace Div. at Duluth, Minn., recently completed a full year—more than 321,000 man-hr —without a lost-time accident. At our Central Furnaces plant in Cleveland, a blast furnace was blown out, partially relined, and placed back in service without a single accident," Mr. Jordan said.

"Our New Haven, Conn., plant has won a safety award for the least accidents in that area among plants working over 170,000 man-hr a month. Our plant in Trenton, N. J., won first place for 1947 in the annual Inter-plant Safety Contest sponsored by the New Jersey Dept. of Labor. Our Donora, Pa., plant has just received six certificates of honor from the State Dept. of Labor and Industry for perfect safety records in six units of the plant. And at the Cuyahoga Works, our largest plant in Cleveland, steady improvement has been made during the last three years in both accident severity and frequency, and the plant has just established a mark of approximately 1,500,000 man-hr without accident."

Galvanizers Plan Meeting

St. Louis

• • • **Technical and operating** men of the galvanizing division of the steel industry will attend a meeting of The Galvanizers Committee to be held on Monday and Tuesday, Apr. 11 and 12, at the Hotel Statler, here.

On Monday morning, members of the Committee, which is sponsored by the American Zinc Institute, will attend the opening session of the Institute's annual meeting scheduled for that day, when subjects of mutual interest are listed for discussion. On Monday afternoon, the Committee will make an inspection tour of the Granite City Steel Co. plant at Granite City, Ill.

Separate sessions will be held on Tuesday morning and after-

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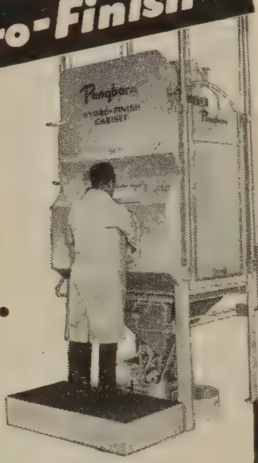

It improves surface finish, removes oxide scale, increases tool and die life through proper maintenance. Hydro-Finish is the new versatile impact blasting process that uses a fine mesh abrasive suspended in water and holds tolerances to .0001 inches.

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noon. At the open session on Tuesday morning, featured topics will be "The Future Market for Zinc-Coated Products" by Robert Meyer, of Carnegie-Illinois Steel Corp.; "Continuous Coating Units" by H. W. Lynn, of Wean Engineering Co.; and "Electrolytic Pickling for Galvanizing and Terne Lines" by E. A. Matteson, of Aetna-Standard Engineering Co. The Tuesday afternoon session will be for committee members only.

The Chairman of The Galvanizers Committee is F. F. Aloi, Bethlehem Steel Co. Responsible for the program at this, the Twenty-Second meeting of The Galvanizers Committee, are F. M. Morrow, Armco Steel Corp.; H. W. Bradley, Inland Steel Co.; J. A. Eckel, Carnegie-Illinois Steel Corp.; L. C. Flickinger, Youngstown Sheet & Tube Co.; F. G. White, Granite City Steel Co.; and G. A. Stein, Wheeling Steel Corp.

Will Hold 3-Day Forum

New York

• • • **Engineers responsible** for the design, construction, and operation of air transports and other aircraft will assemble here Apr. 11 to 14 for the SAE National Aeronautic and Air Transport Meeting, and Aircraft Engineering Display, in Hotel New Yorker. A feature of the meeting will be the Apr. 12 three-session all-day forum on "Getting the Best Out of Our New Transports," with airline engineers functioning as official hecklers to focus attention upon practical operating problems.

Formal sessions will end Apr. 13 at a dinner to be addressed by Gen. Joseph T. McNarney, USAF, Commanding Gen., Air Materiel Command, Wright Field, Dayton, who will talk on "Air Force Activities in Rockets, Jet Propulsion, and Supersonic Flight." The toastmaster will be Ralph S. Damon, president, Trans World Airline, New York. The address will be by S. W. Sparrow, SAE president, and of The Studebaker Corp., South Bend, Ind.

On Apr. 14 the engineers will visit the plants of Wright Aeronautical Corp., at Wood-Ridge, N. J., and of the Propeller Div., Curtiss-Wright Corp., at Caldwell, N. J.

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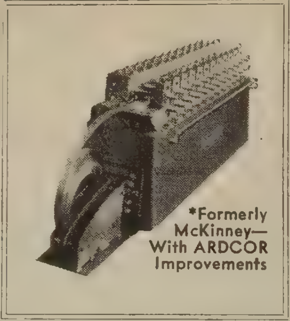

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ATMOSPHERE CONTROL is complete and positive. The atmosphere gas is introduced through a simply-designed, trouble-free connection.
LONG LIFE of the alloy retort is assured by the fact that it remains within the heat at all times. Only the work enters and leaves the furnace.
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Reports Decreased Net And Slackened Demand

Cleveland

• • • **Ferry Cap** & Set Screw Co. reports 1948 net profit was $456,281, or $2.92 a share compared with $514,990 or $3.30 a share the previous year. The company paid $1.50 a share in 1948 and $1.85 in 1947.

Production, according to president Harold D. North, exceeded that of 1947 but adjustments in selling prices did not fully absorb further cost increases.

Mr. North in his letter to shareholders states that postwar demand has slackened and backlog of orders at the end of 1948 was significantly lower than a year ago. He states, however, "Your management is hopeful that, barring general curtailment in production schedules, recent years' volume will be substantially maintained in 1949."

Total current assets of Ferry Cap & Screw Co. are listed as $1,517,172 and earned surplus at end of 1948 was $936,793.

Awards Given by Dravo

Pittsburgh

• • • **Awards totaling** $500 have been given to 11 Dravo Corp. employees for the best papers submitted in the company's 10th annual technical papers competition.

Top prize of $150 was won by Orval Auhl, general superintendent of the contracting division, for an article on the construction of Bluestone Dam at Hinton, W. Va., which was completed last December by Dravo. Mr. Auhl's paper was presented before the Pittsburgh chapter, American Society of Civil Engineers and later was published in the magazine, "Civil Engineering."

R. D. Darrah, air-conditioning engineer in the machinery division, took second prize of $100 for a paper on the air-conditioning of crane cabs in steel mills and foundries. The paper was presented before the annual convention of the Assn. of Iron & Steel Engineers and was later published in the magazine "Iron & Steel Engineer."

For their paper on welded fabrication of shipping containers, G. J. Green and D. H. Marlin of Dravo's weld engineering department, were awarded third prize of $50. This paper was presented at the annual convention of the American Welding Society and later published in the magazine, "Welding Journal." The same two men also received an honorable mention award for another paper on welding.

Other honorable mention awards of $25 each went to: W. L. Price, marine repair department, for a paper on modernizing a sand and gravel dredge for the Warner Co., Philadelphia; G. E. Marley, power department, for a paper on expanding the power output at Weirton Steel Co.; G. O. Griffin, Dravo safety director, for a paper on the responsibility of management, supervision and labor for accident prevention in the construction industry; A. J. Dawson, chief engineer, marine department, for a paper on diesel engines in river traffic; C. A. Hill, controller, for a paper on office expenses; J. T. Connell, marine repair department, for a paper on repowering the towboat, *New Orleans;* and Erle M. Hays, electrical engineer, for a paper on safety codes for material handling machinery.

New Chairmen Appointed

Pittsburgh

• • • **Charles R. Ritter,** traffic manager of Luria Bros. & Co., Philadelphia, has been reappointed chairman of the transportation committee of the Institute of Scrap Iron & Steel Inc. by Edward L. Solomon, of Pittsburgh, who is president.

Stanley M. Carpenter, traffic manager of Luria Steel & Trading Corp., New York, has been named vice chairman of the committee.

Zero Month Seen for Autos

Detroit

• • • **The next** 30 days may well be the most critical period during 1949 for the automobile industry.

At the end of this time, it will be known whether or not the sale of new cars and trucks has bounced back as vigorously as automobile sales managers expect. Automakers will also know whether their commitments for 1½ million vehicles between now and mid-June are in line with actual demand.

More important to the steel in-

$500 prize contest
for New Applications of MicroRold® Stainless Steel in gauges .015 and thinner
1ST PRIZE $250
2ND PRIZE 100
10 PRIZES 15
TOTAL $500

Washington Steel Corporation announces a contest with $500.00 in prizes for suggestions for new uses or applications of MicroRold stainless steel sheet and strip in gauges of .015 or thinner. Entries will be judged on the basis of economic practicability and originality by a board of three impartial judges selected by the corporation; the decisions of the board will be final. There is no limit on the number of suggestions that each entrant may submit.

By submitting an entry each contestant grants to Washington Steel Corporation the non-exclusive right to promote the manufacture and sale of any article or idea contained in the entry. All entries must be submitted on your company letterhead.

The contest closes at midnight, June 30, 1949, and all entries must be postmarked on or before that time. Winners will be notified by mail on or before July 31, 1949. Duplicate prizes will be awarded in case of ties.

Employees of Washington Steel Corporation and its advertising agency and members of their families are ineligible. The contest is subject to all applicable federal, state and local laws.

Mail entries to:
Contest Headquarters,
Washington Steel Corporation,
Washington, Pennsylvania.

WASHINGTON STEEL CORPORATION
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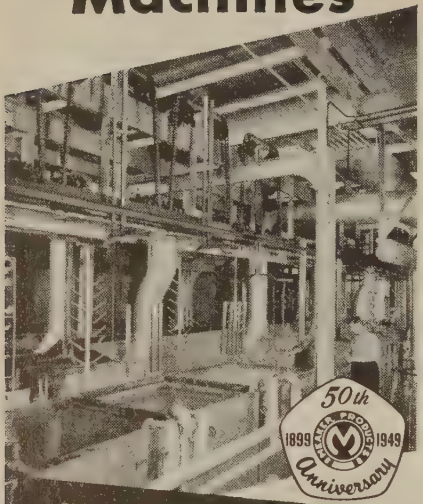

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for mass production of
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dustry is the fact that the next 30 days will tell the story about conversion steel. If sales of new cars are at a very high rate, there could be a last minute rush back into conversion. If sales hold to the normal curve there may still be a last minute demand for more steel which will be ultimately reflected in a need for conversion steel. On the other hand, if sales flop during the next 60 days, it may be that all conversion steel tonnage except that called for under noncancellable contracts will go by the board.

Diamond Imports Drop Equal to '39 Averages

Washington

• • • **More than 10 million** carats in industrial diamonds and worth about $35 million were imported into the United States last year, according to figures now being tabulated by the Commerce Dept. This includes $630,000 worth of diamond dust.

Foreign trade reports for January 1949 show a sharp drop in diamond imports for industrial use when compared with either January a year ago or the monthly average for 1948. They are now comparable to 1939 averages.

The first month's figures are 307,000 carats, valued at $800,000 as compared with 569,000 carats valued at $1.8 million for January 1948. The monthly average last year was 887,000 carats worth approximately $2.8 million.

A substantial majority, both in quantity and value, of the 1948 supply, was imported from the Union of South Africa which supplied more than $27 million worth.

Other principal exporters to this country were the Belgian Congo and Brazil—each with $2.7 million worth. About $1 million worth was obtained from the United Kingdom, exclusive of her colonies and dominions.

An unrevealed portion of the 1948 imports went into the national stockpile. All diamonds obtained through ECA which were suitable for the purpose automatically went to the stockpile.

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AMA Group to Meet

New York

• • • **The Production Div.** of the American Management Assn.; has announced a national conference of 825 production executives to consider methods to make production systems more quickly sensitive to changes in demand for output and to maintain an adequate work force at a time when work loads fluctuate. The sessions will be held here, Apr. 12 to 13, in the Waldorf-Astoria Hotel.

In announcing the meeting the AMA said that a recent survey of production executives showed that flexibility of budgeting and production scheduling and preparations to cushion the possible shock of layoffs due to the return of the buyer's market and technological displacements are a prime concern of production executives at present.

Representatives of management, labor and government will discuss these questions at six sessions of AMA's conference. Special attention will also be given the emerging pattern of wage demands by labor.

Jalopy Scrapping Lags

Detroit

• • • **The number of** jalopies being scrapped still lags far behind the annual average.

According to a report compiled by R. L. Polk & Co., Detroit, statisticians for the automotive industry, 855,517 passenger cars were scrapped during 1948. This is far below the 24-year average figure of 1,617,853 cars a year, Mr. Polk said.

The story is somewhat different in the truck field. A total of 307,867 trucks went off the road last year, compared with the 24-year average of 249,602.

The agency estimates that total number of vehicles scrapped is approximately equal to the replacement market.

Motor vehicles scrapped during the 24-year period, 1925 through 1948, total 44,818,927 of which 38,828,471 were passenger cars and 5,990,456 were trucks.

Mr. Polk estimates that the total number of vehicles in operation has increased from 17,476,254 in 1924 to 38,894,883 in 1948.

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THE BUFFALO WIRE CLOTH MAN

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MY DEEP CRIMP KEEPS MY MESH RIGID
. . . holds it firmly in place . . . gives me long life. I'm crimped many ways for all kinds of service.

I'M WOVEN IN MANY SIZES
. . . of meshes and wires for every industrial need.

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Specify ARMSTRONG Drop Forged Eye Bolts for extra strength—correctly engineered proportions, forged-in quality, uniformity of design in all sizes and the best mild steel, heat treated to increase tensile strength. Built to tool standards, not hammered out as "tonnage" forgings, they always carry their load safely.

Stocked by Armstrong distributors with or without shoulders, threaded or as blanks in 16 sizes (openings from ¾" to 4" i.d.).

Write for the New S-48 Catalog, just released.

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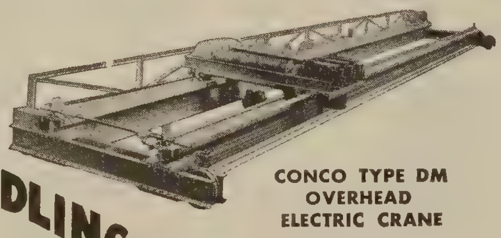
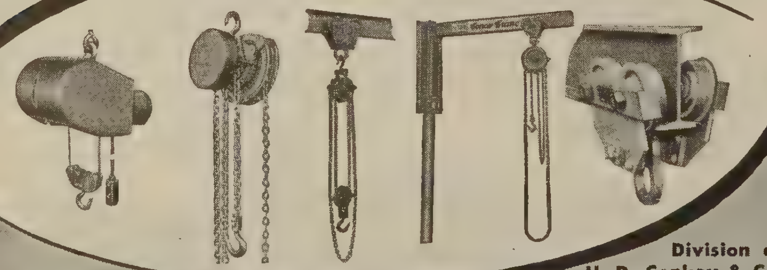
CONCO HANDLING EQUIPMENT



CONCO TYPE DM OVERHEAD ELECTRIC CRANE

● WRITE today for complete information on the CONCO line of hand-powered and electric cranes, hoists and trolleys — a complete line, tried and proven for over twenty years. CONCO engineers are qualified to recommend the right type of handling equipment for faster, more economical production in your shop. Write us now, and take advantage of our long experience in moving more materials, faster and at less cost.

CRANES • HOISTS • TROLLEYS



Division of
H. D. Conkey & Co.

CONCO ENGINEERING WORKS, 15 Grove St., MENDOTA, ILL.

Ups Allocations For Additional Equipment

Washington

• • • An additional $20 million worth of American-made machinery and equipment was included in ECA authorizations which were approved last week for first half delivery. About $1 million in railroad and other transportation equipment, for the first quarter 1950, was also approved for French North Africa.

Allocations included $4.6 million in construction and mining equipment for France and her colonies, $1 million worth of iron and steel mill products and materials, and $1.8 million worth of metalworking equipment for Italy.

Machine tool authorizations included $1.3 million worth for France and $120,000 worth for Norway.

No Change Reported In National Gypsum's Net

Buffalo

• • • President Melvin H. Baker told stockholders of the National Gypsum Co. at their annual meeting that sales and net earnings of their company for the first quarter of 1949 will be about the same as reported for the corresponding period of 1948. In the first 3 months of last year, the company listed sales of $15,388,000 and earnings of $1,521,000.

Band Saw Manual Available

Washington

• • • Printed copies of revised Simplified Practice Recommendation R214-48, Metal-Cutting Band Saws (Hard Edge, Flexible Back), are now available, according to an announcement by the Commodity Standards Div. of the National Bureau of Standards.

The recommendation, established in 1945, consists of a simplified list of stock types and sizes of hard edge, flexible back, metal-cutting band saws. Width, thickness, and number of teeth per inch are listed for two types of saws, regular and skip-tooth. Size tolerances as well as general provisions covering type of tooth set, shape of teeth, width of set and hardness are included.

The revision adds five sizes of regular type and two sizes of skip-tooth metal-cutting band saws, and adds certain general provisions relating to type of tooth set.

Copies of the recommendation are for sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 10¢ each. A discount of 25 pct will be allowed on orders of 100 or more copies.

Increased Efficiency

St. Louis

• • • **The installation** of a radio-telephone communications system to control railroad movements in the plant area of Granite City Steel Co. was completed recently and is now in full operation, according to Hayward Niedringhaus, president of the company.

In announcing the new system, Niedringhaus said the company had been informed by Southwestern Bell Telephone Co. that it is the first "heavy" industry in a metropolitan area west of the Mississippi River to have its intra-plant railroad operations controlled by radio-telephone.

Radio-telephones were used extensively during the war for aircraft and for ground communications. The system is now in use by numerous police departments, on major railroads and on river boats. It is different from the mobile telephones now available for company or private automobile.

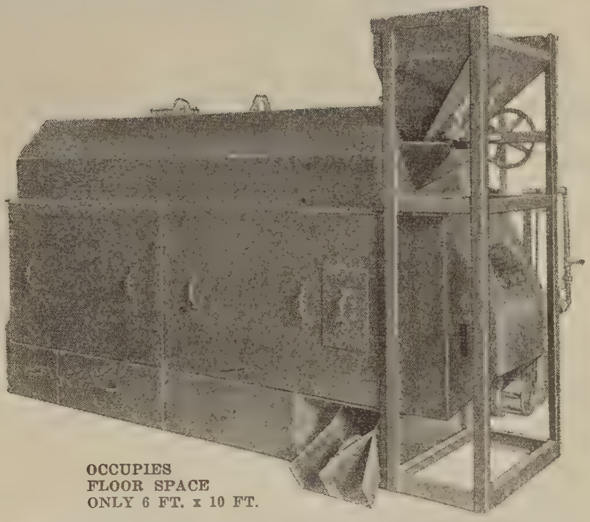
Age Limit Set for Minors

Washington

• • • **Because of the rapid** increase in the use by industry of new substances known as radioactive isotopes—one of the by-products in the development of atomic energy—the Secretary of Labor is considering a hazardous occupations order under the Fair Labor Standards Act barring the employment of minors between 16 and 18 years of age in workrooms where such materials are manufactured, used, packaged or stored.

A recent investigation of occupational hazards in the new field of isotopes disclosed that the Atomic Energy Commission is already enforcing elaborate safety precautions in plants and contracting laboratories under its jurisdiction. The commission ad-

Unmatched Records of METALWASH Machines!



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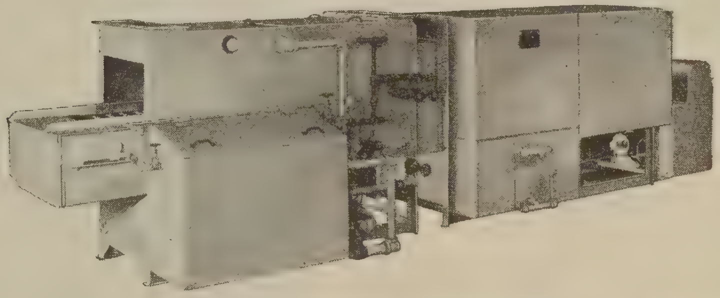
FLOOR SPACE
ONLY 6 FT. x 10 FT.

2255 lbs. of SCREWS per hour WASHED-RINSED-DRIED

- This return type machine is ideal for handling screw machine products, stampings, slugs, cups and other parts.
- Ten tons of machine screws are cleaned and dried in 8 hours—removing chips, cutting oils and shop dirt quickly and thoroughly.
- Automatic feeder simplifies handling. Loads and discharges at same end for one-man operation!



This Conveyor Type Machine-Washes -Rinses-Dries 360 Baskets per hour

This machine cleans and dries 24 inch square baskets containing metal parts at the rate of 360 baskets per hour. Chips, cutting oils, drawing compounds and shop dirt are automatically removed—An ideal machine for processing castings, stampings, machined parts, containers, housings and various small parts in baskets.

If You Have a Cleaning, Pickling or Drying Problem, Let Us Solve It.

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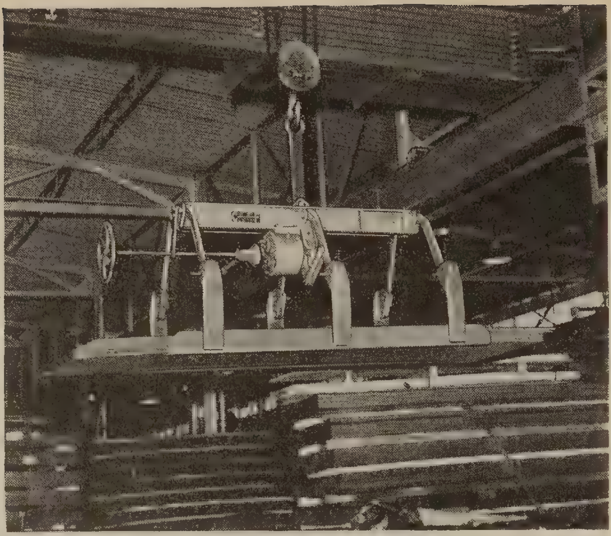
Save TIME Save SHEETS



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C-F LIFTERS

Handle loose or bundled sheets with one of these C-F Lifters and you save TIME and SHEETS, because C-F Lifters, under one man end control, can handle more sheets per load safer, faster and more economically. Tong action grips loads tightly, yet design features like wide bearing surfaces give full protection to stock edges. End control of C-F Lifters permits closer stocking of piles—resulting in more efficient use of storage facilities.

C-F Lifters are available in capacities from 2 to 60 tons or larger, in standard or semi-special designs.

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If you use gears in the products you build, check with Fairfield. Submit your gear problems for FAIRFIELD ENGINEERING SERVICE.

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FAIRFIELD For FINE GEARS

ministratively establishes an 18-year minimum for work involving exposure to radioactivity in such establishments. Further, in contract laboratories, a clause in the contract requires compliance with all federal, state and local laws and regulations applicable.

Again Heads Waste Group

Chicago

• • • **The Metal Dealers** Div. of the National Assn. of Waste Material Dealers, Inc., 1000 strong, reelected Emanuel Hettlemen, K. Hettlemen & Sons, Baltimore, president at their annual meeting at the Stevens Hotel here, Mar. 21 to 23.

Also reelected by this division were vice-presidents: D. J. Chiappari, Charles Harley Co., Los Angeles; Joseph Roth, Roth Bros. Metal Co., Inc., Syracuse, N. Y.; Hyman Moskowitz, Moskowitz Bros., Cincinnati; and Leo Selig, J. Solotken & Co., Inc., Indianapolis. Clinton M. White, NAWMD, New York, was reelected secretary.

GM Expects Big Crowd

Detroit

• • • **General Motors** expects to attract nearly half a million persons to Convention Hall, Apr. 10 through 17 for a showing of its 1949 line of cars.

In addition to the displays shown for the first time at the Waldorf in January, GM is adding many animated exhibits describing the styling, research and engineering activities of the corporation.

Included in the new exhibits are streamlined city coaches with capacity of 55 passengers, a complete diesel locomotive cab assembly and a fully-transparent panel truck made of plexiglass for show purposes.

Other exhibits will include the latest jet-model Allison engine, General Motors parts and accessories line, Frigidaire and Delco appliances and other diesel engine activities.

General Motors employees will see the exhibits first on the evening of Apr. 8 and all day Apr. 9 with the public showing starting on Sunday, Apr. 10.

Small Business Obtains 70 Pct Army Contracts

Washington

• • • **Reviewing** its procurement program during the first 7 months of fiscal year 1949, the Dept. of the Army has announced that 44¢ of every contract dollar went to "small business" concerns. Gordon Gray, Assistant Secretary of the Army, points out that the number of contracts awarded to small concerns comprised 70 pct of the total number of contracts let during the 7-month period.

"Small business" firms are generally defined as those having 500 or fewer employees, are independently owned and operated and are not dominant in their fields of business.

A total of 198,483 procurement contracts, amounting to $504,541,682, were awarded to small business firms during the period of July 1, 1948 to Jan. 31, 1949, as compared with a total of 283,173 procurement awards amounting to $1,158,104,614 during the same period.

The figures shown represent prime contracts. Since a considerable portion of the work called for in prime contracts is performed through sub-contracting, the figures consequently do not reflect all the benefits accruing to other small business firms serving as sub-contractors for firms receiving Army contracts.

More About Diesels

Detroit

• • • **Sound Industrial** Applications is the subject of a 2-week training program being given by Detroit Diesel Engine Div. of General Motors Corp. to its retail sales personnel.

The first week of training is devoted to a study of the basic diesel engine, its components and operating characteristics.

The second and final week is spent on analysis of power requirements, suitable drive arrangements and other factors that must be considered in connection with specific types of machinery.

A special text, "Application Data Manual" has been prepared for the course.

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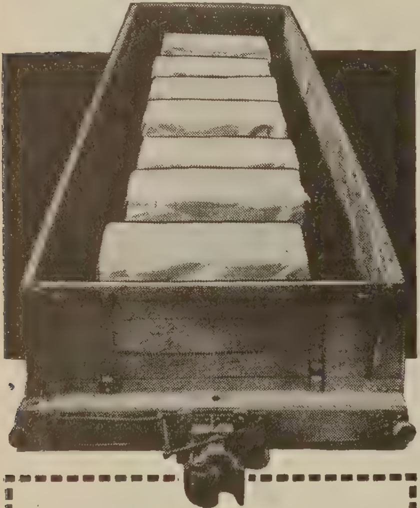

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Report Claims Rise For Unemployment Benefits

Washington

• • • **Claims** for unemployment benefits continued to rise during the week ending Mar. 19, the Federal Security Agency reported.

FSA said that unemployment claims totaled 1,946,500—an increase of 6900 over the previous week. But the agency pointed out that the rate of increase was the smallest of any non-holiday week since November 1948.

Initial claims (as contracted with continuing claims) rose from 319,000 to 331,100 during the week.

A total of 32 states reported drops in initial claims during the week. Initial claims increased by 2800 in Pennsylvania, but declines ranging from 2000 to 3000 were reported from California, Michigan, Ohio, New Jersey, and New York.

Profit Reported Down

Boston

• • • **Net profit** of Perkins Machine & Gear Co., West Springfield, Mass., for 1948 dropped to $67,700 from $129,000 the previous year. Sales last year were $2,916,000; previous year, $3,126,000.

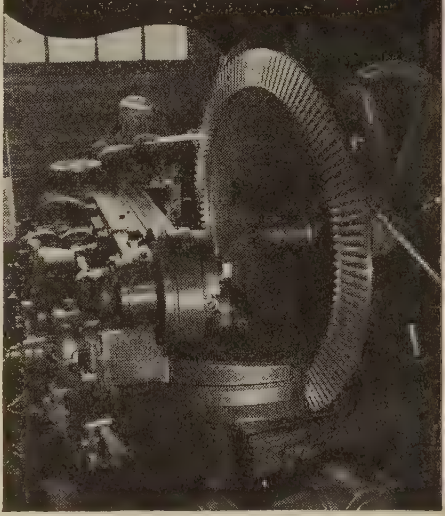
According to John Oakley, president, the drop in earnings last year was due to extensive engine design changes, requiring engineering and complete tooling on new aircraft and propeller gears. This, coupled with reduced customers' shipping schedules, particularly in the household appliance industry, resulted in an operating loss in the final 1948 quarter.

Steelworkers Are Safer

Washington

• • • **Chances of injury** in a steel plant are only half those of manufacturing as a whole or for other metalworking industries. The 1948 rate, according to preliminary figures by the Bureau of Labor Statistics, stood at about 7.2 per million man-hours for iron and steel as compared with 13.2 for all manufacturing.

LARGE INDUSTRIAL GEARS



Bevel and mitre gears up to 60" dia. are cut on gear planers to accurate tolerances.

CUSTOM MADE GEARS
up to 145" diameter

You can save time, money and errors in your large and heavy industrial gear requirements with the prompt, custom service of SIMONDS GEAR. Within easy shipping distance of many heavy industry plants—with a personalized attention to your specific gear requirements—SIMONDS GEAR is able to assure you fast, accurate gear service for all heavier gear needs. Size range includes: Spur Gears up to 145"—Bevel and Mitre Gears up to 60"—Worm Gears up to 72"—also worms, worm gears, racks and pinions. Materials include: cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite. Place your next heavy gear inquiry with SIMONDS GEAR and test the difference!

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.

SIMONDS GEARS

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Announces Seasonal Production Cuts In Home Appliance Field

Pittsburgh

• • • **Production schedules** at the Westinghouse Electric Appliance Div. plant, Mansfield, Ohio, are being reduced on electric ranges, Laundromat automatic washers, electric clothes dryers and some small appliances. Total employment, however, remains above the pre-war maximum of 5000 and the wartime peak of approximately 5600.

The assembly of some of these products will go on one shift beginning the week of Apr. 4, and the total cuts in production will result in the furloughing of approximately 1100 of the Mansfield plant's 7200 men and women.

The refrigerator production line, for the present will not be cut back and will continue on two shifts.

"This is a seasonal reduction and is the result of present inventory," J. H. Ashbaugh, vice president in charge of the division, said.

To Terminate All Overseas Offices of OFL by July

Washington

• • • **With only** $13 million worth of surplus property in inventory, the Office of Foreign Liquidation has begun closing out its overseas offices and will liquidate the entire organization as of June 30, 1949.

Orders have been issued for the closing of the Latin American and Australian offices as of Mar. 31, and for termination of the remaining European and Pacific offices as of May 15. All others have already been terminated.

Any uncompleted work after June 30 will be taken over by the State Dept. or assigned to other agencies. If any surplus remains, the original owning agency will make disposal.

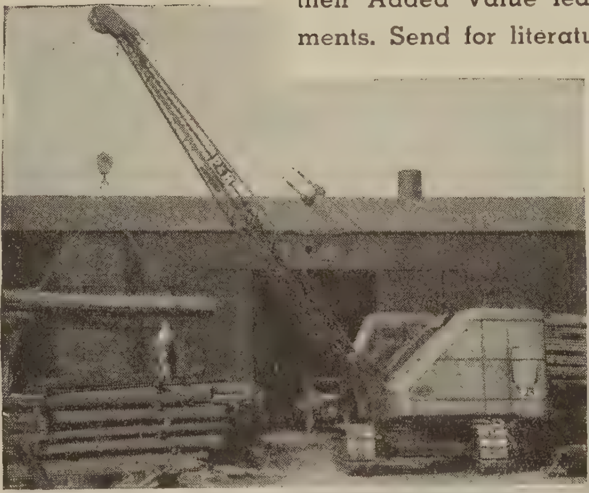
During the life of the organization, the OFLC disposed of approximately $10.5 billion worth (at original cost) of surpluses located overseas. A substantial portion was sold through bulk sales to foreign governments.

About $2 billion was received from the disposals or about 20 pct of original cost.

P&H Crawler Cranes do yard jobs

FASTER, SAFER, AT A SAVING!

Have you the handling efficiency outside your plant that you have inside? P&H Crawler Cranes can give you fast, flexible, versatile yard service with one-man operation — to speed materials handling. P&H Crawler Cranes with their Added Value features are wise investments. Send for literature!

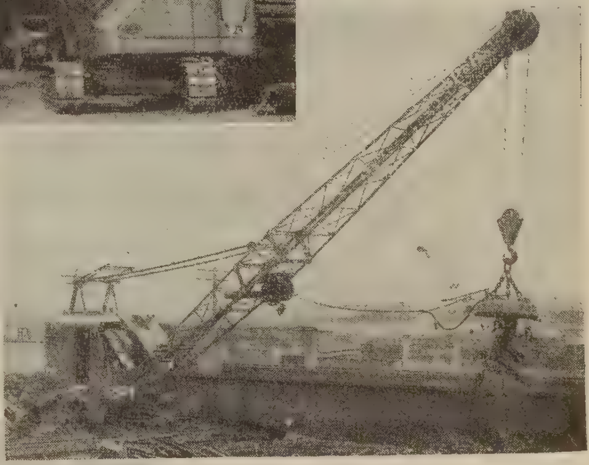


CRAWLER

P&H Crawler Cranes are easy to operate because of P&H's smooth, responsive hydraulic control. You can operate them in close quarters because of P&H's exclusive and simplified method of steering and braking.

MAGNET

Equipped with magnet, the P&H Crawler Crane loads scrap quickly. For those countless lifting jobs in plant yards, you can make no better choice than a P&H. Its construction of rolled alloy steels means extra long, trouble-free service.



CLAMSHELL

Bulk materials are moved speedily and easily with a P&H Crawler clamshell and movement is not restricted to inplace trackage. In addition P&H clear-view, all-weather cabs permit year-round operation.

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HARNISCHFEGER CORPORATION

There's a P&H Industrial Crawler Crane to Meet Your Requirements.
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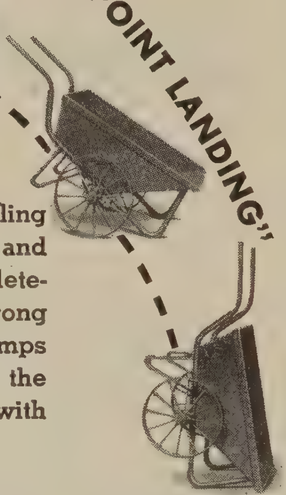
NEW HEAVY-DUTY CART

WITH "3-POINT LANDING"



Here's just the cart you need for wheeling *coal, scrap, chips, turnings, borings* and similar heavy materials. All-steel, completely welded and reinforced. Made extra strong and rugged for heavy duty service. Dumps easily. Rests securely in any one of the three positions shown here. Available with roller bearings, if desired.

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STERLING WHEELBARROW CO., Milwaukee 14, Wis.

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RED-STRAND
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SAFE—DEPENDABLE—ECONOMICAL

"HERCULES" (Red-Strand) Wire Rope and Wire Rope Slings have proved their fitness by the acid test of actual performance. There is a right type for any purpose. Our Engineering Department will gladly help you select the correct rope or sling for your particular needs.

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Enters Final Judgment Against 18 American Screw Manufacturers

Washington

• • • **Attorney General** Tom C. Clark has announced the entry in the Federal Court at Chicago of a final judgment in a civil anti-trust suit against Phillips Screw Co., American Screw Co., and 16 other screw and screw driver and bit manufacturers.

The judgment, which was consented to by the parties, terminates various domestic and foreign restraints in the field of cross-recessed head screws and bolts, commonly known as "Phillips" screws, and tools used in connection therewith.

The defendants account for approximately 75 pct of the total of such products manufactured and sold in the United States.

The attorney general said the judgment entered recently calls for the cancellation of the domestic patent license agreements under which domestic prices have been fixed. It also provides for the termination of international patent license agreements between Phillips Screw Co., and American Screw Co., and leading English, Canadian and Japanese screw manufacturers, which have been the basis for an international division of territories.

The judgment also requires Phillips and American to license, on a reasonable royalty basis, patents owned, acquired or applied for by them within 5 years from the date of the judgment. It further requires American to supply, upon request and without charge, technical information to any licensee under its patents.

Assistant Attorney General Herbert A. Bergson, head of the Antitrust Div., said: "This is another instance in which the Antitrust Div. has been able to restore competitive conditions to a vital industrial field.

"By allocating markets and fixing prices through patent license agreements these defendants had to a large extent eliminated competition in the manufacture and sale of 'Phillips' screws, which are of increasing importance to American and world industry. This decree cancels those illegal arrangements and opens up to competitive forces this necessary industrial commodity."

The defendants in this case include the following companies:

Phillips Screw Co., Portland Oregon; American Screw Co., Providence; American Hardware Co., New Britain, Conn.; Continental Screw Co., New Bedford, Mass.; Illinois Tool Co., Chicago; National Screw & Mfg. Co., Cleveland; Parker-Kalon Corp., New York; Pheoll Mfg. Co., Chicago; Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.; Scovill Mfg. Co., Waterbury, Conn.; Apex Machine & Tool Co., Dayton; Black & Decker Mfg. Co., Towson, Md.; Bridgeport Hardware Mfg. Corp., Bridgeport, Conn.; Independent Pneumatic Tool Co., Chicago; North Brothers Mfg. Co., Philadelphia; Stanley Works, New Britain, Conn.; Vlchek Tool Co., Cleveland; Parker Mfg. Co., Worcester.

Reports Increased Sales With Decline in Income

Cleveland

• • • **Net sales** of Apex Electrical Mfg. Co. for the year 1948 reahed an all-time high of $34,181,464, President C. G. Frantz reported in a letter to stockholders. Net sales for 1947 totaled $31,443,431.

Consolidated net income for 1948, after all charges and provision for federal income taxes, amounted to $1,477,891, compared with $1,803,443 for 1947.

Mr. Frantz said the company's decrease in net income was a direct result of the sharp deline in business volume experienced during November and December by most all segments of the home appliance industry. This drop in volume, he said, was the sharpest ever felt by the manufacturers of major home appliances.

Recent slight modifications in Regulation W will prove helpful to the appliance industry, and there now are indications of improvement in the near future, Mr. Frantz said. Full restoration of the appliance industry, however, requires complete elimination of restrictions on down payments.

Expenditures on plant and equipment during 1948 amounted to $818,498, chiefly to provide additional facilities for manufacture of new products such as the Apex Wash-a-Matic clothes washer and automatic clothes dryer.

Named Bank Director

New York

• • • **Lawrence Schacht,** president of Schacht Steel Construction, Inc., has been elected a director of the National Bronx Bank of New York.

HALLDEN
Automatic Shears

CUSTOM BUILT SHEARS FOR ANY APPLICATION

Hallden Automatic Flattening and Cutting Off Machines can be built into lines requiring special shearing applications.

Hallden Automatic Shears are designed to permit continuous feed of metal through the machine by synchronizing the flattener with the flying shear. Cutting accuracy can be held to plus or minus 1/64".

Hallden Shears are self-contained units which, under normal operation, require little maintenance other than lubrication.

Hallden's flexible design allows quick changing of shear knives and easy removal of flattening rolls for grinding. The shear knives always move in a mutual plane.

If you have a shearing problem, consult Hallden, *the shearing specialists.*

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THOMASTON, CONNECTICUT

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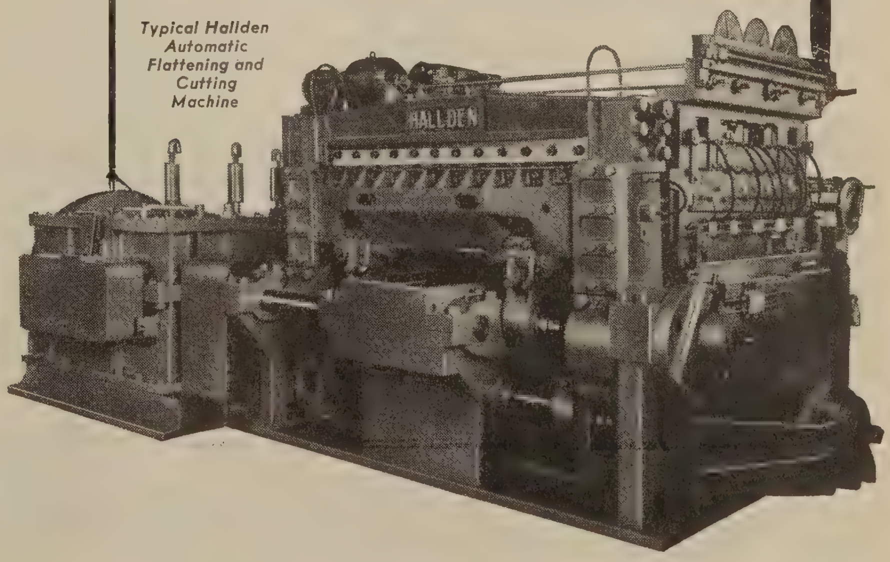

Typical Hallden Automatic Flattening and Cutting Machine

Available for your Data File
Valuable CATALOG
Complete Information on
WASHERS and
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THE WORLD'S LARGEST PRODUCER OF WASHERS
WROUGHT WASHER MFG. CO.
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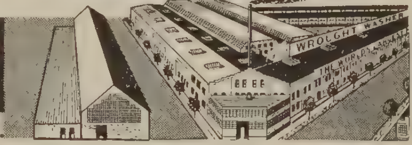
Here's a pocket edition catalog made to order for those engaged in the selection and purchase of washers and stampings . . . forty-six fact-packed pages of worth-while descriptive material, including illustrations of many of the more than 22,000 dies available in our plant to save you unnecessary die charges and delay. Write for your free copy, today. It will be sent to you without cost or obligation. Ask for Catalog No. 20.

WROUGHT WASHER
MANUFACTURING CO.
The World's Largest Producer of Washers
2202 S. BAY ST., MILWAUKEE 7, WIS.



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"To start with, H-VW-M automatic conveyors are versatile. They can be used for cleaning, pickling, plating, anodizing, bright dipping, or a combination of many different treatments and coatings. There's a size and type for each individual application. In many instances the full automatic type serves best—improves working conditions, maintains a high quality product and develops savings that more than justify the investment —even where the work is highly diversified.

"Wherever H-VW-M conveyors—full or semi-automatic, or combinations of both are installed they pay off many ways: Reduce rejects, lessen cost per unit of processed work, noticeably improve uniformity of finished product. Hundreds of H-VW-M conveyors are in successful operation today in many different industries.

For complete information, ask your H-VW-M representative for copies of bulletins FA-103 and SA-101, or write to headquarters.

"What's so good about H-VW-M AUTOMATIC CONVEYORS?"

M. J. MOLL, Chief Equip. Sales Engineer, H-VW-M COMPANY

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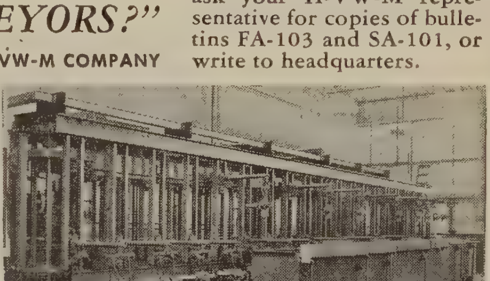

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4030

Increase in Canadian Production of Copper

Toronto

• • • **Canadian production** of copper in January totaled 20,805 tons as compared with 20,447 tons in the like months of 1948 and 14,360 tons in January, 1947.

Refined copper at 35,172 tons in January compares with 16,234 tons in 1948 and 13,346 tons in 1947. Exports of refined copper totaled 13,727 tons valued at $4,999,180 in January this year against 11,743 tons valued at $4,345,032 tons in January, 1948. Domestic consumption of refined copper was estimated at 10,303 tons for January.

Production of nickel in January amounted to 11,180 tons against 10,774 tons in January, 1948 and 9766 tons in the same month of 1947. Exports of nickel in January totaled 10,140 tons valued at $7,632,996 compared with 14,683 tons valued at $8,016,250 for January, 1948.

Fansteel's Sales Up in '48

Chicago

• • • **Robert J. Aitchison,** president, Fansteel Metallurgical Corp., in his annual letter to stockholders said, "The financial condition of Fansteel and its subsidiaries continues to be excellent." Net sales last year for Fansteel and its wholly owned subsidiaries, Tantalum Defense Corp. and Weiger Weed and Co., totaled $7,381,876.93. This is an increase of $1,100,000 above 1947 volume. Consolidated net income after federal taxes was $348,961.21.

Vascoloy-Ramet Corp., unconsolidated subsidiary of Fansteel, had a net income last year of $58,131.09, after taxes. Net sales of Vascoloy-Ramet totaled $2,413,483.41, or an increase of approximately $300,000 over the comparable figure last year. Until last year, ownership of the capital stock of Vascoloy-Ramet was shared by Fansteel and Vanadium Alloy Steel Co. During August last year, ownership of the common stock of the Vascoloy-Ramet Corp. was taken over by Fansteel.

Tantalum Defense Corp. finished last year with a net loss before federal taxes of $86,649.54.

Willard H. Dow Killed In Canadian Plane Crash

Midland, Mich.

• • • **Willard H. Dow,** president and chairman of Dow Chemical Co., his wife and three other persons, were killed March 31, when their plane in which they were flying to attend a banquet at Massachusetts Institute of Technology, crashed and burned about three miles from London, Ontario.

Willard H. Dow

Dr. Dow, who had been president of Dow Chemical since 1930, has been rated as one of the nation's foremost chemists. He graduated from the University of Michigan in 1919 and held a number of honorary degrees. He served with the regular army in the first world war. Recently he was a member of the Navy Munitions Board and the Chemical Warfare Service Advisory Board. He became president of Dow when he was 33, at the death of his father, who founded the company in 1897.

Increases Quotas For Export of Wire And Sheet Metal Products

Washington

• • • **Increases in** second quarter 1949 export quotas for eight iron and steel wire and sheet metal products have been announced by the Office of International Trade. Increases range from 2500 to 5000 tons.

Export quotas for all iron and steel products for the second quarter were first announced early in February. But current supplies of the wire and sheet products are easing sufficiently to permit an increase in allowable exports. Revised quotas are:

Electrical sheet	13,000 to 18,000 tons
H.R. Strip band and hoop	16,500 to 20,500 tons
Wire, uncoated	19,000 to 22,000 tons
Wire, galvanized	20,000 to 24,000 tons
Wire, barbed	15,000 to 17,500 tons
Woven wire fencing	4,800 to Open-end tons
Nails, wire	7,500 to 10,000 tons
Nails, unspecified	

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Buying Reported Spotty; Inquiries Good; Outlook Uncertain

• • • **Major segments** of the mamachine tool industry reported this week that the sales pattern of the past 33 months continues relatively unchanged, with buying spotty, volume of inquiries good, but outlook uncertain.

Continuing the trend of mergers, consolidations and outright company sales that has steadily reduced the number of companies comprising the machine tool industry since the end of the war, Defiance Machine Works, Inc., Defiance, Ohio, was offered for sale this week. Defiance is housed in a modern plant containing about 175,000 sq ft of floor space. The company, established in 1850, is a going business, producing horizontal boring mills, drill presses, and a new type of plastic preform press. Defiance employs 400 workers.

The Bullard Co., Bridgeport, Conn., recently added to its line the products previously manufactured by Universal Boring Machine Co., Hudson, Mass. According to E. C. Bullard, president, work will start immediately to transfer operations from Hudson to Bridgeport. Universal Boring Machine Co. was established in 1906 and a few years ago was purchased by National Can Co. In addition to the line of horizontal boring and drilling machines Bullard will manufacture the Universal Precison Machine Aligning Level.

In Cleveland, Tell Berna, general manager, National Machine Tool Builders' Assn, revealed that British machine tool exports increased 400 pct during the period 1938-1949. Based on an 11-months' average, British machine tool exports in 1938 amounted to 372,784 lb sterling, compared with 1,153,868 lb sterling for the corresponding period of 1948.

British Machine Tool Exports Showed Big Increase in 1938-1949 Period

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U. S. machine tool exports, he pointed out, on a 12 months' average, for 1938 were $5,380,000 compared with 1948 monthly exports, based on a 9 months' average, of $5,373,775. U. S. machine prices have increased 60 pct since 1938, however, and fewer U. S. machines were exported in 1948 than in 1938, making the British increase more serious from the point of view of the U. S. industry than it would first appear.

With the increase in British exports has come a change in the fundamental export market structure. China is practically gone, as are Australia, the United Kingdom, and Germany. Russia is blocked.

Perhaps a major underlying reason for the increase in British machine tool exports is the risk insurance available to British builders from the government. With the insurance, a British machine tool builder can collect in 60 days, if the foreign buyer defaults for any reason. The U. S. machine tool industry has made representations for a similar insurance plan to the Export-Import Bank, with little or no result.

In Chicago, toolmakers report they are getting releases on some of the machinery ordered under the ECA program. However, so far the only type of machines that have been cleared are specials. Chicago makers report that it appears that ECA is not okaying the final sale of American machine tools in the cases in which the same type of machine tool is manufactured in the foreign country which has ordered this specific machinery.

A case in point is the French inquiry for radial drills, which so far have not been released and appear that they won't be, because the French do make standard types of radial drilling machines. The same is true on standard engine and tool lathes.

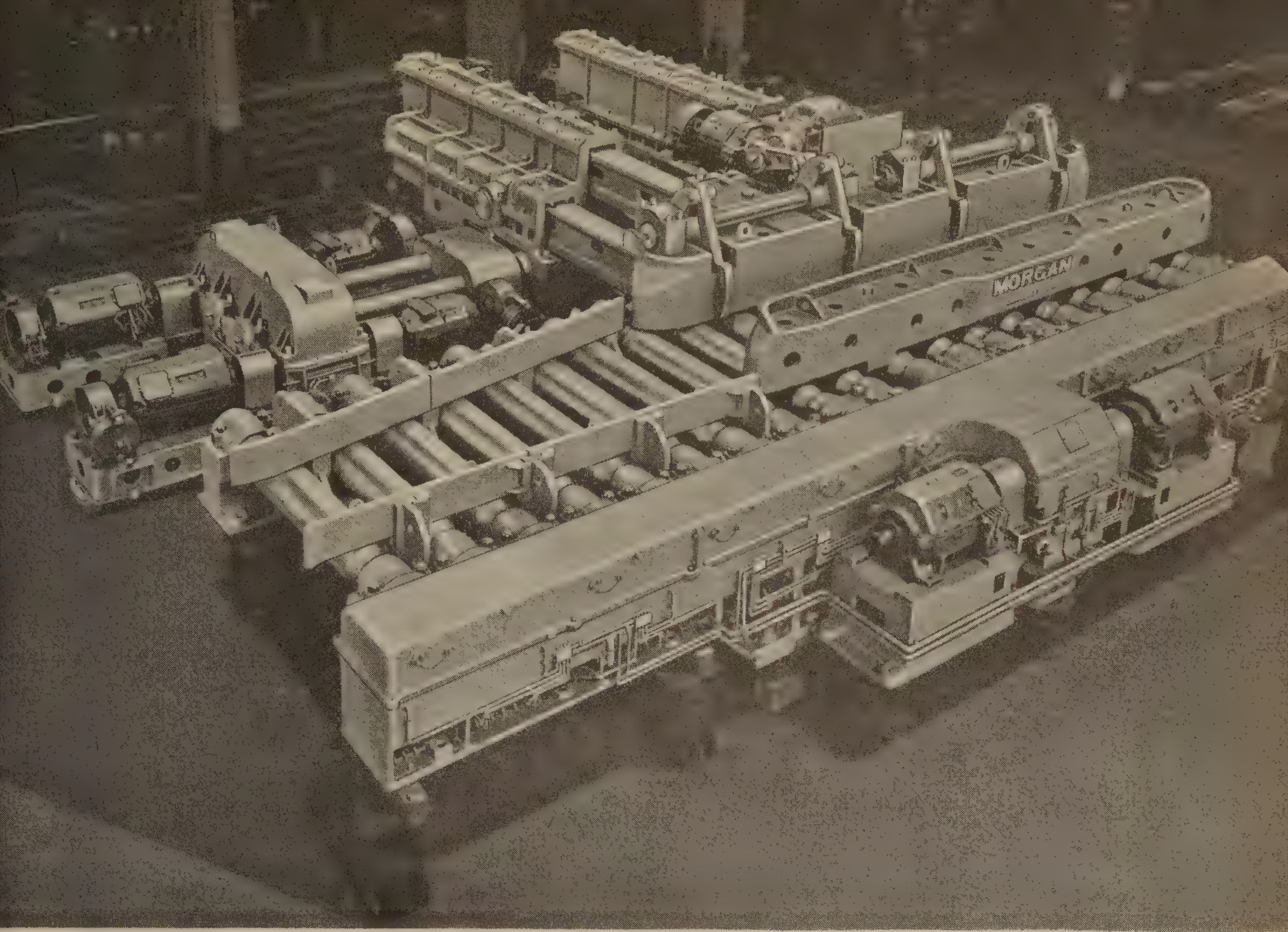
The French at the moment, Chicago machine tool makers report, are doing a considerable volume of business with the English on some types of tooling, because of a more favorable currency setup.

Orders have been cleared on some types of machinery for Italy, but here again clearance has been confined to heavy tools and specials. One machine tool maker in Chicago with a 4-months' backlog reports that 80 pct of this volume is special tools to be shipped overseas under the ECA program.

Prices on gray iron castings to machine tool makers in the Chicago area have in cases been lowered from 1¢ to 1½¢ per lb compared with the same casting prices 90 days ago. Special castings are off from ½¢ to 1¢ per lb and the machine tool makers expect that prices may slide further. They report that this dip in casting prices does not permit them to reduce the cost of the machinery because their manufacturing volume is so much lower now than it was last year.

In Detroit a survey of machine tool suppliers and users indicates a continuation of the previous low level of buying. Some sources are inclined to describe the period as one of "disturbing quiet." Numerous requests for quotations continue to come in, however, according to reliable machine tool sources.

There has been no change during the past week of the reported tooling for a new engine at Chrysler. The reported development of a 6-cylinder, valve-in-head engine for Ford continues to blow hot and cold; no confirmation of such a program has been found.



45″ BLOOMING MILL TABLE AND MANIPULATOR

Morgan 45″ Blooming Mill Manipulator with Front Mill Table. Manipulator is of the overhead type, electrically driven, with retractable heads so the table rollers can be removed without dismantling the manipulator heads. Table girders are of cast steel box section type with integral oil trough on drive side. All gears are totally enclosed, operating in oil, and have hardened teeth. All bearings are of the anti-friction type lubricated through a centralized motor operated system.

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NONFERROUS METALS

. . . News and Market Activities

Metals Market Weak Following New Wave of Price Reductions

Aluminum, Lead and Copper Reflect Decreases But Show No Strength

° ° °

New York

• • • **The nonferrous** metals were hit by another wave of price reductions last week which were accompanied by further reductions in scrap and aluminum ingots. The fourth reduction in the lead price in the space of a month occurred on Apr. 1 when American Smelting & Refining Co. reduced its price by 1¢. During the month the price of lead dropped a total of 5.50¢ to a price of 16.00¢ New York. St. Joseph Lead Co. acted on Monday, establishing the St. Louis price at 15.80¢. The current price is lower than at any time since April 1948 when it jumped from 15.00¢ to 17.50¢.

A reduction of ¼¢ per lb in the price of copper was made by AS&R first on Mar. 28, a price which was being freely offered to consumers by the following day. It is learned that by Monday two primary producers had opened their books for May at the 23.50¢ price. Sales are reported to have been made at that level to fabricating subsidiaries.

There is considerable speculation in consumer circles as to why such a small reduction was made. There is a good possibility that the reduction may be sufficient to capture an appreciable portion of the available tonnage. But consumers had been expecting a significantly lower price, particularly in view of the low level of scrap prices. Some consumers say that scrap prices are such as to warrant 18¢ copper or less. The 23.50¢ copper price has remained unchanged since August 1948.

The lead and zinc markets are reported to be very quiet. It is learned that there is very little free tonnage being placed for copper. Consumers are wary of buying at current market prices when repeated reductions have already taken place and further readjustments are believed to be in the wind. There is no doubt that the price of copper would have been lower by this time except for the loss of copper in the Utah mine strike. Tonnages have accumulated for delivery to the stockpile, which further serves to bolster the market.

Copper scrap buying prices have dropped another ½¢ to 1¢ per lb. Aluminum scrap prices have been reduced by ¼¢ to 1¢ per lb. The ingot markets are completely inactive, and there are no scrap buyers. Ingot producers believe that scrap prices have dropped to purely fictitious levels, because they say that tonnages could not be bought at those figures. Zinc scrap prices have dropped by ¼¢ to 1¢ per lb. Lead scrap has dropped by ½¢ to 2½¢ per lb. Refineries and brass mills are completely disinterested in the scrap market.

Last week it became known that competition in the aluminum market had worked some changes in the deal between Reynolds Metals Co. and the Wisconsin Electric Cooperative (THE IRON AGE, Feb. 17, p. 166).

Monthly Average Prices

• • • The average prices of the major nonferrous metals in March based on quotations appearing in THE IRON AGE, were as follows:

	Cents Per Pound
Electrolytic copper, Conn. Valley	**23.490**
Lake copper, Conn. Valley	**23.625**
Straits tin, New York	**$1.03**
Zinc, East St. Louis	**17.055**
Zinc, New York	**17.755**
Lead, St. Louis	**18.785**
Lead, New York	**18.981**

At the time of the initial agreement, the Aluminum Co. of America had a 4-year backlog of cable orders, and there was no other cable being offered to the market at that time. It had not been foreseen that Permanente would be offering cable in such heavy tonnages this year. Under the revised Reynolds contract, a minimum of 13.5 million lb of cable will be deliverable this year. About 2 million lb a month can be delivered during April, May and June. Earlier deliveries will be due to Reynolds' contracts with three independent stranders—Southern Electrical Corp., Chattanooga, Tenn.; Midland Wire Co., Tiffen, Ohio; and Bergen Wire and Rope Corp., Lodi, N. J. Reynolds operates one stranding mill at Lister Hill, Ala.

The revised agreement requires a deposit of $1.4 million due by May 1, in contrast to the former requirement of $6 million by May 14. Reynolds may cut its deliveries of cable during the first 3 years of the contract to the tonnage of orders on hand from cooperatives as of Aug. 1.

The deposit figure calls for minimum deliveries of 35 million lb during the 3 year period.

Nonferrous Metals Prices

	Mar. 30	Mar. 31	Apr. 1	Apr. 2	Apr. 4	Apr. 5
Copper, electro, Conn.	**23.25- 23.50**	**23.25- 23.50**	**23.25- 23.50**	**23.25- 23.50**	**23.25- 23.50**	**23.25 23.50**
Copper, Lake, Conn.	**23.625**	**23.625**	**23.625**	**23.625**	**23.625**	**23.625**
Tin, Straits, New York	**$1.03**	**$1.03**	**$1.03**	**$1.03**	**$1.03**	**$1.03**
Zinc, East St. Louis	**16.00**	**16.00**	**16.00**	**16.00**	**16.00**	**16.00**
Lead, St. Louis	**16.80**	**16.80**	**15.85**	**15.85**	**15.80**	**15.80**

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	38.50
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$52.00
Bismuth, ton lots	$2.00
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$1.80 to $1.87
Copper, electro, Conn. Valley	23.25 to 23.50
Copper, lake, Conn. Valley	23.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$100 to $110
Lead, St. Louis	15.80
Lead, New York	16.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, carlots	34.50
Mercury, dollars per 76-lb flask, f.o.b. New York	$87 to $90
Nickel, electro, f.o.b. New York	42.93
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$72 to $75
Silver, New York, cents per oz.	71.50
Tin, Grade A, New York	$1.03
Zinc, East St. Louis	16.00
Zinc, New York	16.70
Zirconium copper, 10-12 pct Zr, per lb contained Zr	$12.00

Remelted Metals

Brass Ingot

(Published prices, cents per lb delivered, carloads)

85-5-5-5 ingot		
No. 115	17.50*	18.50
No. 120	17.00*	18.00
No. 123	16.50*	17.50
80-10-10 ingot		
No. 305	....	23.75
No. 315	....	20.75
88-10-2 ingot		
No. 210	....	30.50
No. 215	....	27.50
No. 245	21.00*	21.75
Yellow ingot		
No. 405	14.50*	16.00
Manganese bronze		
No. 421	....	21.50

* F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	22.50-22.75
0.60 copper, max.	22.25-22.50
Piston alloys (No. 122 type)	19.25-19.75
No. 12 alum. (No. 2 grade)	17.75-18.75
108 alloy	19.25-19.75
195 alloy	19.75-20.25
13 alloy	22.25-22.75
AXS-679	19.25-19.75

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95 pct-95½ pct	20.50-20.75
Grade 2—92 pct-95 pct	19.50-19.75
Grade 3—90 pct-92 pct	18.50-18.75
Grade 4—85 pct-90 pct	17.50-17.75

Electroplating Supplies

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	38.64
Electrodeposited	34⅜
Rolled, oval, straight, delivered	37.34
Ball anodes	38⅜
Brass, 80-20	
Cast, oval, 15 in. or longer	35⅞
Zinc, oval, 99.99	
Ball anodes	25.00
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz. lots, per troy oz, f.o.b. Bridgeport, Conn.	79

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	48.00
Copper sulfate, 99.5 crystals, bbls	9.10
Nickel salts, single or double, 4-100 lb bags, frt. allowed	18.00
Nickel chloride, 300 lb bbl.	24.50
Silver cyanide, 100 oz. lots, per oz.	59
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc sulfate, crystals, 22.5 pct, bags	
Zinc sulfate, 25 pct, granules, bbls, frt allowed	

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 35.1¢ to 66¢; 11 to 13, 36.1¢ to 78¢; 23 to 25, 38.2¢ to $1.07; 35 to 37, 45.7¢ to $1.65; 47 to 49, 67.5¢ to $2.41.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 37.5¢ to 34.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅜ in., R317-T4, 33.5¢ to 32.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheet and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam. in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangles: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb. per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢; 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢. 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and shapes		
Hot-rolled	56	45
Cold-drawn	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Extruded Shapes	Rods	Sheets
Copper	36.78	....	37.18
Copper, hot-rolled	....	33.03	....
Copper, drawn	....	34.28	....
Low brass	38.70*	....	35.79
Yellow brass	37.11*	....	34.10
Red brass	38.70*	....	35.79
Naval brass	34.33	33.08	39.02
Leaded brass	....	28.63	....
Commercial bronze	39.39*	....	36.73
Manganese bronze	37.92	36.42	42.52
Phosphor bronze, 5 pct	....	....	56.05
Muntz metal	33.89	32.64	37.08
Everdur, Herculoy, Olympic, etc.	....	40.67	41.73
Nickel silver, 10 pct	46.38	46.74	44.44
Architectural bronze	32.73	....	....

* Seamless tubing.

Scrap Metals

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21⅛	20⅜
Yellow brass	18⅜	17½
Red brass	19⅝	18⅞
Commercial bronze	20	19¼
Manganese bronze	18⅛	17¼
Leaded brass rod ends	18⅛	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper, wire	16.00
No. 2 copper, wire	15.00
Light copper	14.00
Refinery brass	14.00*

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper, wire	16.00
No. 2 copper, wire	15.00
Light copper	14.00
No. 1 composition	11.00
No. 1 comp. turnings	10.50
Rolled brass	9.50
Brass pipe	10.00
Radiators	9.50
Heavy yellow brass	8.50
Aluminum	
Mixed old cast	9.50
Mixed old clips	9.50
Mixed turnings, dry	8.00
Pots and pans	9.50
Low copper	13.00

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	14¾—15
No. 2 heavy copper and wire	13¾—14
Light copper	12¾—13
Auto radiators (unsweated)	8¼—8½
No. 1 composition	9¼—9½
No. 1 composition turnings	9—9¼
Clean red car boxes	8½—8¾
Cocks and faucets	8¼—8½
Mixed heavy yellow brass	7—7¼
Old rolled brass	8¼—8½
Brass pipe	8¾—9
New soft brass clippings	12—12½
Brass rod ends	9½—9¾
No. 1 brass rod turnings	8½—8¾

Aluminum

Alum. pistons and struts	5—5½
Aluminum crankcases	6¾—7
2S aluminum clippings	11½—12
Old sheet and utensils	6¾—7
Borings and turnings	4—4½
Misc. cast aluminum	6¾—7
Dural Clips (24S)	6¾—7

Zinc

New zinc clippings	9—9¼
Old zinc	6¾—7
Zinc routings	4¼—4½
Old die cast scrap	4¼—4½

Nickel and Monel

Pure nickel clippings	20—21
Clean nickel turnings	15—16
Nickel anodes	20—21
Nickel rod ends	19—21
New Monel clippings	15½—16½
Clean Monel turnings	10—11
Old sheet Monel	12—13
Old Monel castings	10—11
Inconel clippings	13—14
Nickel silver clippings, mixed	7½—8
Nickel silver turnings, mixed	6½—7

Lead

Soft scrap lead	8—8½
Battery plates (dry)	4½—4¾

Magnesium Alloys

Segregated solids	8—9
Castings	4½—5½

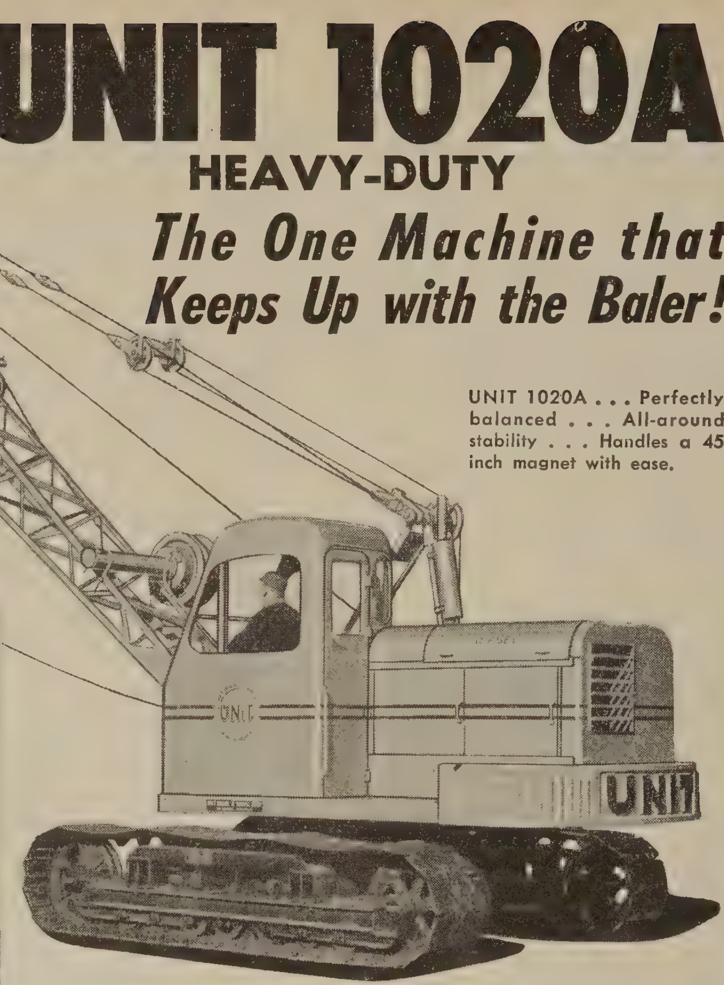
Miscellaneous

Block tin	77—79
No. 1 pewter	58—60
No. 1 auto babbitt	42—44
Mixed common babbitt	11½—12
Solder joints	14—15
Siphon tops	45—47
Small foundry type	13½—14
Monotype	12½—13
Lino. and stereotype	12—12½
Electrotype	9½—10
New type shell cuttings	12¾—13
Hand picked type shells	6—6½
Lino. and stereo. dross	6½—7
Electro. dross	4½—5

UNIT 1020A

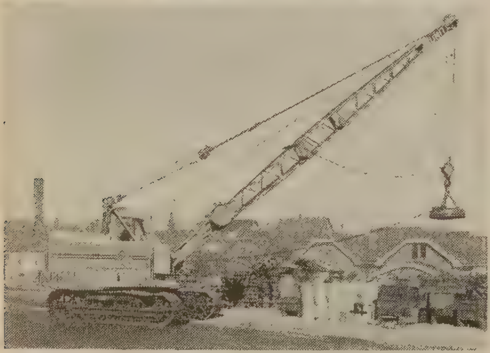
HEAVY-DUTY

The One Machine that Keeps Up with the Baler!



UNIT 1020A . . . Perfectly balanced . . . All-around stability . . . Handles a 45 inch magnet with ease.

The UNIT 1020A is designed and built for heavy-duty scrap yard operation. Extra long crawlers, wider axles and shoes, plus additional counterweight, provide perfect balance and all-around stability. Tipping strains are absorbed by hook-rollers. Owners using 45 inch magnets find them easy to handle. With full loads, there's no weaving or rocking. It has power and stability without bulk . . . fast on the hoist . . . easy on the swing. To modernize your yard — start with a UNIT 1020A.



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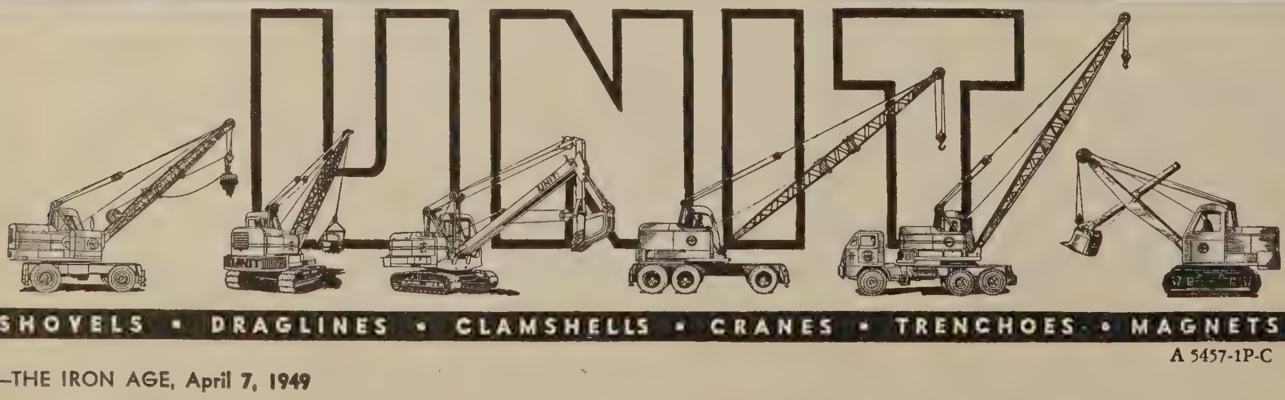
◀ Quickly convertible to hook, clamshell or magnet, the UNIT 1020A can handle every scrap yard job.

The UNIT 1020A handles heavy steel, baled or loose scrap with day-in and day-out dependability. ▶



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A 5457-1P-C

SCRAP

. . . *News and Market Activities*

Downward Price Trend Gathers Momentum

New York

• • • **This week the** scrap market followed last week's trend with lower quotations for all items. There has been no substantial buying and consumers are showing no interest at lower prices. There are few sales and those that do take place are usually at lower quotations.

THE IRON AGE scrap composite price dropped $5.00 per gross ton to $26.17 per gross ton. This price is based on the average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia. This item fell an average of $6 at Pittsburgh and Chicago and $5 at Philadelphia. Current quotations for No. 1 heavy melting are: Pittsburgh, $28 to $29; Chicago, $27 to $28; and Philadelphia, $24 to $25.

Prices slipped in all areas with reductions up to $8 for No. 1 heavy melting at Buffalo. Tonnages moved are small and in some cases prices only represent an appraisal of the market. With the continued lack of buying interest on the part of the consumer, prices can still slip to lower quotations. It is anyone's guess when the market will reach the end of its present decline.

High mill inventories help to keep the price trend down, but will their demands in the future stabilize the price of scrap? Again, present prices may induce new buying and put a prop under today's sagging quotations.

Gloom prevails in all market areas. Some dealers and brokers are not interested in scrap which they have no hope of selling. There are few commitments on future contracts. Some trade sources feel the decline has become a rout and it will take some large tonnage buying on the part of the mills to halt the spiral.

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PITTSBURGH — Heavy melting steel scrap prices broke another $6 a ton this week. The new low prices are based on consumer purchases as well as general appraisal of all factors involved in the market. Shoveling turnings resisted the trend and cast grades remained unchanged. Machine shop and mixed borings and turnings were off $2, rail crops were down $8. Current prices have closed most distant markets to Pittsburgh buyers but the volume of mill buying is still below the rate at which local scrap is being generated by fabricators. Heavy mill buying would call for out-of-district material and, according to trade sources, would make the market rebound.

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CHICAGO—The downward spiral turned into a power-dive last week. At press time the market was off $4 with no indication where it would stop. Sales were light and scattered, but dealer and broker activity was frenzied—in that these traders were trying to ascertain the market. The trade reports today's market is worse than that experienced during the depression. At least in the early 30's they could move scrap—today they can't. Dealers are getting rough treatment. The brokers are taking what little scrap they need direct from industries, as they apparently figure a dealer can stock inventory and industry can't. The dealers, however, aren't buying anything, they don't have to buy, so that the yards in this area are comparatively bare. Railroad specialties prices followed the rest of the list downward. Two months ago these items were leading the downward trend, today they are following.

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PHILADELPHIA—No. 1 melting was down another $5 last week, and No. 2 was down $3, based on an appraisal of the market. Openhearth and other grades are very hard to move, as no consumer is buying heavily. No. 2 bundles were down $1.50. Breakable cast was sold at $28, down by $3. Other cast grades were $4 lower. Machine shop turnings were down 50¢, mixed borings were down $1.50. Shovelings held at last week's price based on a continuing order. Very little scrap is moving while consumers eat into their high priced inventories. Foreign scrap continues to come into Philadelphia and Baltimore in heavy tonnages. With Sparrows Point drawing heavily on imports, Baltimore dealers have nowhere to move their tonnage.

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CLEVELAND—Collapse of the scrap market here and in the Valley appeared to be complete this week. The scrap collection system, keyed to a higher production than the market is presently able to support, is in danger of being disrupted. There is no place for scrap to move. Mills are working desperately to get their inventories down and indications are that no substantial tonnages will move until May or June. Prices quoted are nominal, and nothing short of bona fide buyer interest could probe the real bottom of this market.

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CINCINNATI—All grades were going begging here this week as the scrap market deteriorated to a new low that practically defies appraisal. Mills and foundries continue out of the market, with the more bearish elements talking about a resumption of buying, on a small scale in June. Brokers have few orders and are shipping very little. Mills are trying to get their inventories down and rejects are not uncommon.

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DETROIT—Experienced scrap men here find it difficult to recall when the bottom has fallen out of the scrap market as completely as it has this week. When prices of major grades dropped as much as $8. This follows a break of $3 a week earlier. Brokers were admittedly bidding fantastically low on some offerings and hoping they wouldn't get caught. An offering of alloyed turnings brought no bids whatsoever. Talk here now is that something close to OPA prices may prevail when and if some stability returns to a badly confused situation. A typographical error occurred in last week's quotations. The prices of machinery cast and mixed yard cast should not have appeared. This classification has been replaced by No. 1 cupola cast, covering the entire range of cast grades.

•

NEW YORK—Brokers report little active buying with price changes still on the downside. There are no large tonnage orders and business is virtually at a standstill. No. 1 heavy melting slipped another $5 a ton, making the price $18 to $20 per gross ton. No. 2 heavy melting had broker offerings as low as $16.

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ST. LOUIS—Scrap prices are off an average of $5 a ton in this area. First break in previous quotations occurred with the purchase of 25,000 tons of No. 2 heavy melting scrap by a district mill which had offerings even exceeding that tonnage from local brokers. This item was sold at $24 to $25. Other mills are still out of the market. In some instances brokers are buying to sell in other markets. This was construed to be another sign of a lower and weaker market. There are said to be still a few orders out on the $30 basis for No. 2, but these will expire soon.

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BOSTON—Prices are still slipping and the market remains dull. No. 1 heavy melting hit a new low at $20, but there is none moving. In fact, the downslide in scrap appears to have halted whatever little activity there was. Brokers say that scrap is now in the position that cast has been for about 2 months. They will not quote a price and are out of the market.

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BIRMINGHAM—For another week there is still no large tonnage buying in this area. But sales of small tonnages at lower prices combined with a general appraisal of all market factors caused quotations to decline an average of about $5 a ton. Rerolling rails were sold at $33 to $35. With farmers engaged in spring planting, receipts of agricultural scrap at dealers' yards have declined.

•

BUFFALO—The market for openhearth scrap cracked wide open this week when one of the leading consumers bought an estimated 3000 to 4000 tons of No. 2 heavy melting and dealers' bundles at $22 and $20, respectively. The prices represented declines of $13 and $12 from this interests' March purchase. As a result, No. 1 heavy melting was dragged down to $25-26 and blast furnace grades lost $2 a ton.

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$26.00 to $27.00
RR. hvy. melting	27.00 to 28.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 bundles	22.00 to 23.00
RR. scrap rails	34.00 to 35.00
Rails 2 ft and under	36.00 to 37.00
No. 1 comp'd bundles	26.00 to 27.00
Hand bdld. new shts.	24.00 to 25.00
Hvy. steel forge turn.	26.00 to 27.00
Mach. shop turn.	19.00 to 20.00
Shoveling turn.	24.00 to 25.00
Mixed bor. and turn.	19.00 to 20.00
Cast iron borings	23.00 to 24.00
No. 1 mach. cast.	38.00 to 40.00
Mixed yard cast.	30.00 to 32.00
Hvy. breakable cast.	30.00 to 31.00
Malleable	39.00 to 40.00
RR. knuck. and cup.	34.00 to 35.00
RR. coil springs	34.00 to 35.00
RR. leaf springs	34.00 to 35.00
Rolled steel wheels	35.00 to 36.00
Low phos.	29.00 to 29.50

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$27.00 to $28.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	27.00 to 28.00
No. 2 dealers' bundles	21.00 to 23.00
Bundled mach. shop turn.	19.00 to 21.00
Galv. bundles	18.00 to 20.00
Mach. shop turn.	17.00 to 18.00
Short shov. turn.	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Mix. borings and turn.	17.00 to 18.00
Low phos. hvy. forge	31.00 to 32.00
Low phos. plates	29.00 to 30.00
No. 1 RR. hvy. melt.	29.00 to 30.00
Rerolling rails	38.00 to 38.50
Miscellaneous rails	34.00 to 36.50
Angles & splice bars	35.00 to 36.00
Locomotive tires, cut	35.00 to 37.00
Cut bolster & side frames	34.00 to 36.00
Standard stl. car axles	50.00 to 51.00
No. 3 steel wheels	38.00 to 38.50
Couplers and knuckles	36.00 to 38.00
Rails, 2 ft and under	39.00 to 40.00
Malleable	32.00 to 33.00
No. 1 mach. cast.	30.00 to 32.00
No. 1 agricul. cast.	29.00 to 31.00
Heavy breakable cast.	27.00 to 28.00
RR. grate bars	24.00 to 25.00
Cast iron brake shoes	25.00 to 26.00
Cast iron car wheels	32.00 to 35.00

CINCINNATI

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$25.00 to $26.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	25.00 to 26.00
No. 2 bundles	23.00 to 24.00
Mach. shop turn.	14.00 to 15.00
Shoveling turn.	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Mixed bor. & turn.	15.00 to 16.00
Low phos. 18 in. under	35.00 to 36.00
No. 1 cupola cast.	37.00 to 38.00
Hvy. breakable cast.	31.00 to 32.00
Rails 18 in. and under	40.00 to 42.00
Rails random length	30.00 to 32.00
Drop broken	40.00 to 41.00

BOSTON

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	$15.00 to 16.00
No. 1 bundles	16.00 to 16.50
No. 2 bundles	13.00 to 14.00
Bushelings	15.00 to 16.00
Shoveling turn.	14.25 to 14.50
Machine shop turn.	9.00 to 9.50
Mixed bor. and turn.	8.50 to 9.00
Cl'n cast chem. bor.	22.00 to 27.00
No. 1 machinery cast.	25.00 to 28.00
No. 2 machinery cast.	24.00 to 26.00
Heavy breakable cast.	16.00 to 17.00
Stove plate	20.50 to 21.00

DETROIT

Per gross ton, brokers' buying prices f.o.b. cars:

No. 1 hvy. melting	$20.00 to $21.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles	20.00 to 21.00
New busheling	20.00 to 21.00
Flashings	20.00 to 21.00
Mach. shop turn.	13.00 to 14.00
Shoveling turn.	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Mixed bor. & turn.	13.00 to 14.00
Low phos. plate	20.00 to 21.00
Heavy breakable cast.	14.00 to 18.00
Stove plate	17.00 to 18.00
Automotive cast.	23.00 to 25.00
No. 1 cupola cast.	19.00 to 24.00

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	20.50 to 21.00
Mach. shop turn.	17.50 to 18.50
Shoveling turn.	20.00 to 21.00
Mixed bor. and turn.	15.50 to 16.50
Clean cast chemical bor.	23.00 to 26.00
No. 1 machinery cast.	30.00 to 31.00
No. 1 mixed yard cast.	25.00 to 27.00
Hvy. breakable cast.	27.00 to 28.00
Hvy. axle forge turn.	24.00 to 25.00
Low phos. acid openhearth	27.00 to 28.00
Low phos. electric furnace	29.00 to 30.00
Low phos. bundles	27.00 to 28.00
RR. steel wheels	31.00 to 32.00
RR. coil springs	31.00 to 32.00
RR. malleable	24.00 to 28.00
Cast iron carwheels	33.00 to 34.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 bundled sheets	24.00 to 25.00
Mach. shop turn.	15.00 to 16.00
Shoveling turnings	15.00 to 16.00
Locomotive tires, uncut	32.00 to 33.00
Mis. std. sec. rails	29.00 to 30.00
Steel angle bars	33.00 to 34.00
Rails 3 ft and under	34.00 to 35.00
RR. steel springs	33.00 to 34.00
Steel car axles	40.00 to 41.00
Brake shoes	30.00 to 31.00
Malleable	30.00 to 31.00
Cast iron car wheels	34.00 to 35.00
No. 1 machinery cast.	35.00 to 36.00
Hvy. breakable cast.	26.00 to 27.00
Stove plate	30.00 to 31.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$25.00
No. 2 hvy. melting	25.00
No. 2 bundles	23.00
No. 1 busheling	25.00
Long turnings	18.00
Shoveling turnings	20.00
Cast iron borings	20.00
Bar crops and plate	$26.00 to 28.00
Structural and plate	26.00 to 28.00
No. 1 cupola cast.	36.00
Stove plate	31.00 to 32.00
No. 1 RR. hvy. melt.	28.50 to 30.00
Steel axles	37.00 to 39.00
Scrap rails	33.00 to 34.00
Rerolling rails	33.00 to 34.00
Angles & splice bars	36.00 to 38.00
Rails 3 ft & under	36.00 to 38.00
Cast iron carwheels	35.00 to 36.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	23.00 to 24.00
Mach. shop turn.	17.00 to 18.00
Short shov. turn.	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Low phos.	30.00 to 31.00

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$18.00 to $20.00
No. 2 hvy. melting	16.00 to 17.50
No. 2 bundles	15.00 to 16.00
Mach. shop turn.	11.00 to 12.00
Mixed bor. & turn.	11.00 to 12.00
Shoveling turnings	15.50 to 16.50
Machinery cast.	26.00 to 27.00
Mixed yard cast.	23.00 to 24.00
Heavy breakable cast.	21.00 to 22.00
Charging box cast.	21.00 to 22.00
Unstrp. motor blks.	20.00 to 21.00
Cl'n cast chem. bor.	23.00 to 28.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$25.00 to $26.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 bundles	19.00 to 20.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	21.00 to 22.00
Mach. shop turn.	16.00 to 17.00
Shoveling turn.	18.00 to 19.00
Cast iron borings	16.00 to 17.00
Mixed bor. and turn.	16.00 to 17.00
Clean auto. cast.	30.00 to 31.00
Mixed yard cast.	27.00 to 28.00
Stove plate	27.00 to 28.00
Small indus. malleable	24.00 to 25.00
Low phos. plate	27.00 to 28.00
Scrap rails	34.00 to 35.00
Rails 3 ft & under	38.00 to 39.00
RR. steel wheels	34.00 to 35.00
RR. coil & leaf spgs.	34.00 to 35.00
RR. knuckles & coup.	34.00 to 35.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$27.00 to $28.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles	27.00 to 28.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	27.00 to 28.00
Drop forge flashings	27.00 to 28.00
Mach. shop turn.	16.00 to 17.00
Shoveling turn.	19.00 to 20.00
Steel axle turn.	21.00 to 22.00
Cast iron borings	19.00 to 20.00
Mixed bor. & turn.	19.00 to 20.00
Low phos. 2 ft and under	30.00 to 31.00
No. 1 mach. cast.	36.00 to 38.00
Malleable	32.00 to 33.00
RR. cast.	37.00 to 38.00
Railroad grate bars	28.00 to 29.00
Stove plate	28.00 to 29.00
RR. hvy. melting	33.50 to 34.00
Rails 3 ft and under	40.00 to 41.00
Rails 18 in. and under	41.00 to 42.00

SAN FRANCISCO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$22.00
No. 2 hvy. melting	20.00
No. 1 bales	18.00
No. 2 bales	18.00
No. 3 bales	15.00
Mach. shop turn.	12.00
Elec. fur. 1 ft under	30.00
No. 1 cupola cast.	$30.00 to 35.00
RR. hvy. melting	22.00
Rails	25.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$22.00
No. 2 hvy. melting	20.00
No. 1 bales	18.00
No. 2 bales	18.00
No. 3 bales	15.00
Mach. shop turn.	12.00
Elec. fur. 1 ft under	30.00
No. 1 cupola cast.	$30.00 to 35.00
RR. hvy. melting	22.00

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. 2 hvy. melt.	$22.00
No. 1 & No. 2 bales	23.00
No. 3 bales	23.00
Elec. fur. 1 ft and under	30.00
No. 1 cupola cast.	$30.00 to 32.00
RR. hvy. melting	22.00

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point:

Heavy melting	$23.00*
No. 1 bundles	23.00*
No. 2 bundles	22.50*
Mechnical bundles	21.00*
Mixed steel scrap	19.00*
Mixed borings and turnings	17.00*
Rails, remelting	23.00*
Rails, rerolling	26.00*
Bushelings	17.50*
Bushelings, new fact, prop'd	21.00*
Bushelings, new fact, unprop'd	16.00*
Short steel turnings	17.00*
No. 1 cast.	$48.00 to 50.00*
No. 2 cast.	44.00 to 45.00*

*Ceiling Price.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices . .

Price advances over previous week are printed in Heavy Type; declines appear in *Italics.*

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

	Apr. 5, 1949	Mar. 29, 1949	Mar. 8, 1949	Apr. 6, 1948
Flat-Rolled Steel: (cents per pound)				
Hot-rolled sheets	3.26	3.26	3.26	2.80
Cold-rolled sheets	4.00	4.00	4.00	3.55
Galvanized sheets (10 ga)	4.40	4.40	4.40	3.95
Hot-rolled strip	3.265	3.265	3.265	2.80
Cold-rolled strip	4.063	4.063	4.063	3.55
Plates	3.42	3.42	3.42	2.95
Plates wrought iron	7.85	7.85	7.85	7.25
Stains C-R strip (No. 302)	33.25	33.25	33.25	30.50
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes	$7.75	$7.75	$7.75	$6.80
Tinplate, electro (0.50 lb)	6.70	6.70	6.70	6.00
Special coated mfg. ternes	6.65	6.65	6.65	5.90
Bars and Shapes: (cents per pound)				
Merchant bars	3.35	3.35	3.37	2.90
Cold-finished bars	3.995	3.995	3.995	3.55
Alloy bars	3.75	3.75	3.75	3.30
Structural shapes	3.25	3.25	3.25	2.80
Stainless bars (No. 302)	28.50	28.50	28.50	26.00
Wrought iron bars	9.50	9.50	9.50	8.65
Wire: (cents per pound)				
Bright wire	4.15	4.15	4.194	3.55
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$2.75
Light rails	3.55	3.55	3.55	3.10
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$45.00
Slabs, rerolling	52.00	52.00	52.00	45.00
Forging billets	61.00	61.00	61.00	54.00
Alloy blooms, billets, slabs	63.00	63.00	63.00	66.00
Wire rod and Skelp: (cents per pound)				
Wire rods	*3.40*	3.463	3.619	2.80
Skelp	3.25	3.25	3.25	2.90

	Apr. 5, 1949	Mar. 29, 1949	Mar. 8, 1949	Apr. 6, 1948
Pig Iron: (per gross ton)				
No. 2, foundry, Phila.	$51.56	$51.56	$51.56	$44.61
No. 2, Valley furnace	46.50	46.50	46.50	39.50
No. 2, Southern Cin'ti*	49.46	49.46	49.46	43.28
No. 2, Birmingham	43.38	43.38	43.38	37.38
No. 2, foundry, Chicago†	46.00	46.00	46.00	39.00
Basic del'd Philadelphia*	50.76	50.76	50.76	44.11
Basic, Valley furnace	46.00	46.00	46.00	39.00
Malleable, Chicago†	46.50	46.50	46.50	39.50
Malleable, Valley	46.50	46.50	46.50	39.50
Charcoal, Chicago	73.78	73.78	73.78	62.46
Ferromanganese‡	161.40	161.40	161.40	145.00

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† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy page.

* Does not include interim increase on total freight charges, effective Jan. 11, 1949.

	Apr. 5, 1949	Mar. 29, 1949	Mar. 8, 1949	Apr. 6, 1948
Scrap (per gross ton)				
Heavy melt'g steel, P'gh.	*$26.50*	$32.50	$36.75	$40.25
Heavy melt'g steel, Phila.	*24.50*	29.50	37.50	41.50
Heavy melt'g steel, Ch'go	*27.50*	31.50	34.50	39.00
No. 1, hy. comp. sh't, Det.	*23.50*	28.50	33.00	35.50
Low phos. Young'n	*30.50*	34.50	41.50	45.25
No. 1, cast, Pittsburgh	39.00	39.00	45.50	64.00
No. 1, cast, Philadelphia	*30.50*	34.50	42.00	65.50
No. 1, cast, Chicago	*31.00*	38.00	41.50	70.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50	$14.50	$14.50	$12.50
Foundry coke, prompt	16.50	16.50	16.50	14.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	*23.375*	23.50	23.50	21.50
Copper, Lake Conn.	23.625	23.625	23.625	21.625
Tin, Grade A, New York	$1.03	$1.03	$1.03	94.00
Zinc, East St. Louis	16.00	16.00	17.50	12.00
Lead, St. Louis	*15.80*	16.85	21.30	17.30
Aluminum, virgin	17.00	17.00	17.00	15.00
Nickel, electrolytic	42.93	42.93	42.93	36.56
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	38.50	38.50	38.50	33.00

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL (Base Price)	PIG IRON	SCRAP STEEL
Apr. 5, 1949	3.75197¢ per lb.	$46.74 per gross ton	*$26.17* per gross ton
One week ago	3.75197¢ per lb.	$46.74 per gross ton	$31.17 per gross ton
One month ago	3.75701¢ per lb.	$46.74 per gross ton	$36.25 per gross ton
One year ago	3.28244¢ per lb.	$40.11 per gross ton	$40.25 per gross ton

	FINISHED STEEL		PIG IRON		SCRAP STEEL	
	HIGH	LOW	HIGH	LOW	HIGH	LOW
1949	3.76049¢ Jan. 1	3.75197¢ Mar. 29	$46.82 Jan. 4	$46.74 Jan. 25	$43.00 Jan. 1	$26.17 Apr. 5
1948	3.75700¢ July 27	3.22566¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947	3.19541¢ Oct. 7	2.87118¢ Jan. 7	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.44104¢ Oct. 2	2.54490¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Perpetual Motion

SCRAP · STEEL · COMMODITY · SCRAP · STEEL · COMMODITY · SCRAP · STEEL ·

THERE IS NO SUCH THING AS PERPETUAL MOTION,
BUT THE WHEEL REPRESENTING THE
STEEL CYCLE SEEMS THE CLOSEST THING TO IT.

WHAT KEEPS IT GOING?

The answer is the established iron and steel scrap industry, which exists primarily for this purpose. It comprises about 4,000 dealers, large and small, with about 200,000 persons gainfully employed in collecting, processing and shipping scrap. It represents a huge investment in capital, fortified by enterprise and "know-how" to get our daily accumulation of scrap.

SCHIAVONE-BONOMO CORP.

FOOT OF JERSEY AVE., JERSEY CITY, N. J., U. S. A.
Cable Address: "SCHIABO," NEW YORK
HARRISON, N. J. · NEWARK, N. J. · BROOKLYN, N. Y. · BRONX, N. Y. · STAMFORD, CONN.

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. producing points in cents per pound unless otherwise indicated. Extras apply. (1) Commercial quality sheet grade; prices, 0.25¢ above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Cokes, 1.25 lb, deduct 25¢ per base box. (6) 18 gage and heavier. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 40,000 lb and over. (9) Carload lot in manufacturing trade. (10) Hollowware enameling, gages 29 to 31 only. (11) Produced to dimensional tolerances in AISI Manual Sec. 6. (12) Slab prices subject to negotiation in most cases. (13) San Francisco only. (14) Los Angeles only. (15) San Francisco and Los Angeles only. (16) Seattle only. (17) Seattle and Los Angeles only.

PRODUCTS	Base prices at producing points apply to the sizes and grades produced in these areas														
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		Detroit	Johnstown	Seattle, S. Frisco, LosAngeles	Fontana
INGOTS Carbon forging	$50.00														
Alloy	$51.00						(per net ton)								
BILLETS, BLOOMS, SLABS Carbon, rerolling[12]	$52.00				$52.00	$52.00	(per net ton)						$52.00		
Carbon forging billets	$61.00	$61.00	$61.00	$61.00	$61.00	$61.00	(per net ton)						$61.00		
Alloy	$63.00	$63.00				$63.00	(Bethlehem, Canton, Massillon = $63.00) (per net ton)								
PIPE SKELP	3.25						3.25				Warren = 3.25				
WIRE RODS	3.40	3.40		3.40	3.40		3.40	3.50			Worcester 3.70		3.40	4.05[13] 4.10[14]	
SHEETS Hot-rolled[6]	3.25 to 3.30	3.25	3.25	3.25–3.30	3.25	3.25	3.25	3.25		Warren, Ashland = 3.25		3.45		3.95[15]	4.15
Cold-rolled[1]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.20	4.00	Warren 4.00	4.20		Pittsburg, Cal. 4.95	
Galvanized (10 gage)	4.40	4.40	4.40		4.40			4.40	Canton =4.40	4.40	Ashland =4.40			5.15[15]	
Enameling (12 gage)	4.40	4.40	4.40	4.40			4.40		4.60	4.40		4.70			
Long ternes[2] (10 gage)	4.80		4.80							4.80					
STRIP Hot-rolled[3]	3.25 to 3.30	3.25 to 3.30	3.25	3.25 to 3.30	3.25	3.25	3.25	3.25		3.25	Warren = 3.25	3.45		4.00 to 4.25	4.65
Cold-rolled[4]	4.00	4.25		4.00		4.00	4.00	4.00		New Haven 4.50 Warren = 4.00 to 4.25		4.20 to 4.50			5.55
TINPLATE Cokes, 1.50 lb.[5] base box	$7.75	$7.75	$7.75		$7.85			$7.85	$7.95	Warren, Ohio =$7.75				Pittsburg. Cal.=$8.50	
Electrolytic 0.25, 0.50, 0.75 lb. box	Deduct $1.30, $1.05 and 75¢ respectively from 1.50 lb. coke base box price														
TERNES MFG., special coated	Deduct $1.10 from 1.50 lb. coke base box price														
BLACKPLATE CANMAKING 55 to 128 lb.	Deduct $2.00 from 1.50 lb. coke base box price														
BLACKPLATE, h.e., 29 ga.[10]	5.30	5.30	5.30					5.40		Warren, Ohio =5.30					
BARS Carbon Steel	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35		3.35	Canton =3.35	3.55	3.35	4.05 to 4.10	4.00
Reinforcing (billet)[7]	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35			Canton =3.35		3.35	4.05 to 4.10	4.00
Cold-finished[8]	3.95 to 4.00	4.00	4.00	4.00		4.00	4.00					4.30			
Alloy, hot-rolled	3.75	3.75	3.75			3.75	3.75	Bethlehem, Canton, Massillon=3.75				4.05	3.75	4.80[14]	4.75
Alloy cold-drawn	4.65	4.65	4.65	4.65		4.65	4.65	Massillon=4.65			Worcester 4.95				
PLATE Carbon steel[11]	3.40 to 3.60	3.40	3.40	3.40 to 3.60	3.40 Conshohocken =3.95	3.45	3.40	3.45 Coatesville=3.75, Claymont=3.95 Geneva=3.40, Harrisburg=4.95				3.65	3.45	4.30[16]	5.30
Floor plates	4.55	4.55		4.55				Conshohocken=4.55							
Alloy	4.40	4.40							Coatesville=5.10						
SHAPES, Structural	3.25	3.25	3.25		3.25	3.30	Bethlehem=3.30, Geneva, Utah=3.25						3.30	3.85 to 4.30	3.80
MANUFACTURERS' WIRE[9] Bright	4.15	4.15		4.15	4.15		4.15	4.25	Duluth=4.15, Worcester=4.45				4.15	5.15[13]	
Spring (high carbon)	5.20	5.20		5.20				5.30	Worcester=5.50 New Haven, Trenton=5.50				5.20	Duluth= 5.20-6.15	
PILING, Steel sheet	4.05	4.05				4.05									

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	Chromium Nickel						Straight Chromium		
	301	302	303	304	316	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	15.50	22.75	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	26.75	15.00	18.50	15.25
Forging discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	41.00	24.50	25.00	25.00
Billets, forging	24.25–26.50	24.25–26.50	26.25–28.75	25.50–27.75	39.00–42.75	32.75–35.75	19.50–21.50	20.00–21.75	20.00–21.75
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	44.00	26.00	26.50	26 50
Sheets	37.50–40.75	37.50–40.75	39.50–43.00	39.50–43.00	53.00–57.25	50.00–54.00	33.00	33.50	35.50
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50–30.75	33.00–33.50	36.50–39.50	35.00–35.75	55.00–57.25	48.50–50.00	27.00	33.50	27.50

ELECTRODES

Cents per lb. f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	28.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢

High-carbon-chromium	52¢
Oil hardened manganese	29¢
Special carbon	26.5¢
Extra carbon	22¢
Regular carbon	19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi. 4½¢ higher.

ELECTRICAL SHEETS

24 gage, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45 to 6.05
Electrical	5.95 to 6.55
Motor	6.70 to 6.95
Dynamo	7.50 to 7.75
Transformer 72	8.05 to 10.05
Transformer 65	8.60 to 10.60
Transformer 58	9.30 to 11.30
Transformer 52	10.10 to 11.35

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.20†
Joint bars, 100 lb	4.25
Light rails (from billets) per 100 lb	3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburgh, Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

†CF&I and Inland, $3.50.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

CLAD STEEL

Base prices, cents per pound

Stainless clad	Plate	Sheet
No. 304, 20 pct, f.o.b.		
Coatesville, Pa.	*26.50	
Washington, Pa.	*26.50	*22.50
Claymont, Del.	*26.50	
Conshohocken, Pa.		*22.50
Nickel-clad		
10 pct f.o.b. Coatesville, Pa.	27.50	
Inconel-clad		
10 pct, f.o.b. Coatesville.	36.00	
Monel-clad		
10 pct, f.o.b. Coatesville.	29.00	
Aluminized steel sheets		
Hot dip, 20 gage, f.o.b. Butler, Pa.		9.25

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* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column	Pittsburg, Calif.
Standard & coated nails*	103	123
Galvanized nails*	103	123
Woven wire fence†	109	132
Fence posts, carloads††	114	...
Single loop bale ties	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire	123	...

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* Pgh., Chi., Duluth; Worcester, 6 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth only.

	Base per 100 lb	Pittsburg, Calif.
Annealed fence wire‡	$4.80	$5.75
Annealed, galv. fencing‡	5.25	6.20
Cut nails, carloads‡‡	6.75	...

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‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.

‡‡ Less 20¢ to jobbers.

HIGH STRENGTH, LOW ALLOY STEELS

Mill base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	HI Steel	Mayari R	Otiscoloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	5.20	5.20	5.20	5.30	5.20	5.30	5.20	5.20	5.65
Sheets									
Hot-rolled	4.95	4.95	4.95	5.25	4.95	4.95	4.95	4.95	5.25
Cold-rolled	6.05	6.05	6.05	.....	6.05	6.05	6.05	6.05	6.35
Galvanized	.....	6.75	.....	.....	.....	6.75	.....	.....	.....
Strip									
Hot-rolled	4.95	4.95	4.95	....	4.95	4.95	4.95	4.95	5.25
Cold-rolled	.....	.....	6.05	.....	.....	6.05	6.05	6.05	6.35
Shapes	.....	4.95	.....	.....	4.95	5.05	4.95	4.95	.....
Beams	.....	4.95	.....	.....	.....	.....	.....	.....	.....
Bars									
Hot-rolled	5.10	5.10	5.10	.....	5.10	5.10	5.10	5.10	5.40
Bar shapes	.....	5.10	.....	.....	5.10	5.10	5.10	5.10	.....

PIPE AND TUBING

Base discounts, f.o.b. mills,
Base price, $200.00 per net ton.

STANDARD, THREADED AND COUPLED

Steel, buttweld	Black	Galv.
½-in.	43 to 41	21½ to 19½
¾-in.	46 to 44	25½ to 23½
1-in.	48½ to 46½	28½ to 26½
1¼-in.	49 to 47	29 to 27
1½-in.	49½ to 47½	29½ to 27½
2-in.	50 to 48	30 to 28
2½ to 3-in.	50½ to 48½	30½ to 28½
Steel, lapweld		
2-in.	39½	21 to 19
2½ to 3-in.	43½ to 42½	23 to 22
3½ to 6-in.	46½ to 42½	26 to 22
Steel, seamless		
2-in.	38½ to 27	18 to 6½
2½ to 3-in.	41½ to 32½	21 to 12
3½ to 6-in.	43½ to 38½	23 to 18
Wrought Iron, buttweld		
½-in.	+20½	+51
¾-in.	+10½	+40
1 & 1¼-in.	+ 4½	+31
2-in.	− 1½	+27½
3-in.	− 2	+27
Wrought Iron, lapweld		
2-in.	+ 7½	+35
2½ to 3½-in.	+ 5	+30½
4-in.	list	+24½
4½ to 8-in.	+ 2	+26

EXTRA STRONG, PLAIN ENDS

Steel, buttweld		
½-in.	42 to 40	22 to 20
¾-in.	46 to 44	26 to 24
1-in.	48 to 46	29 to 27
1¼-in.	48½ to 46½	29½ to 27½
1½-in.	49 to 47	30 to 28
2-in.	49½ to 47½	30½ to 29½
2½ to 3-in.	50 to 48	31 to 29
Steel, lapweld		
2-in.	39½ to 38½	20 to 19
2½ to 3-in.	44½ to 42½	25 to 23
3½ to 6-in.	48 to 44	28½ to 26½
Steel, seamless		
2-in.	37½ to 32½	18 to 13
2½ to 3-in.	41½ to 36½	22 to 18
3½ to 6-in.	45	25½
Wrought Iron, buttweld		
½-in.	+16	+45
¾-in.	+ 9½	+38
1 to 2-in.	− 1½	+27
Wrought Iron, lapweld		
2-in.	+ 4½	+31½
2½ to 4-in.	− 5	+20
4½ to 6-in.	− 1	+24½

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut length 4 to 24 ft inclusive.

OD in in.	Gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
2	13	19.18	22.56	18.60	21.89
2½	12	25.79	30.33	25.02	29.41
3	12	28.68	33.76	27.82	32.74
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

	Per net ton
6 to 24-in., del'd Chicago	$106.70
6 to 24-in., del'd N. Y.	103.50 to 108.40
6 to 24-in., Birmingham	93.50
6-in. and larger, f.o.b. cars, San Francisco. Los Angeles, for all rail shipment; rail and water shipment less	120.30

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. & shorter	34
All diam, longer than 6 in.	30
Lag, all diam over 6 in. longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifinished Hexagon Nuts

	USS	SAE
7/16 in. and smaller	..	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	..
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

(½ in. and larger)

	Base per 100 lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

(7/16 in. and smaller)

	Pct off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	Pct Off List
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill.

Effective CaF, Content:	Base price per net ton
70% or more	$37.00
60% or less	34.00

LAKE SUPERIOR ORES

(51.50% *Fe, Natural Content, Delivered Lower Lake Ports*)

	Per Gross Ton
Old range, bessemer	$7.60
Old range, nonbessemer	7.45
Mesabi, bessemer	7.35
Mesabi, nonbessemer	7.20
High phosphorus	7.20

After Dec. 31, 1948, increases or decreases in Upper Lake freight, dock and handling charges and taxes thereon to be for the buyers' account.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	31.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8%+ Fe	90.0¢ to $1.75
Aluminum	31.00¢
Antimony	51.17¢
Brass, 10 ton lots	27.25 to 37.25¢
Copper, electrolytic	33.625¢
Copper, reduced	34.25¢
Cadmium	$2.40
Chromium, electrolytic, 99% min.	$3.50
Lead	24.00¢
Manganese	60.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	67.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.0¢
Tin	$1.155
Tungsten, 99%	$2.90
Zinc, 10 ton lots	17.00 to 20.75¢

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$14.00 to $15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$16.00 to $17.00
Foundry, Byproduct	
Buffalo, del'd	$22.95
Chicago, f.o.b.	20.40
Detroit, f.o.b.	19.40
New England, del'd	23.35
Seaboard, N. J., f.o.b.	21.50
Philadelphia, f.o.b.	21.05
Swedeland, Pa., f.o.b.	21.00
Painesville, Ohio, f.o.b.	20.90
Erie, del'd	$21.50 to 23.50
Cleveland, del'd	22.45
Cincinnati, del'd	21.50
St. Paul, f.o.b.	23.50
St. Louis, del'd	20.98
Birmingham, del'd	18.66

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

	Carloads, Per 1000
First quality, Pa., Md., Ky., Mo., Ill. (except Salina, Pa., add $5)	$80.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	11.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$80.00
Childs, Pa.	84.00
Hays, Pa.	85.00
Chicago District	89.00
Western, Utah and Calif.	95.00
Super Duty, Hays, Pa., Athens, Tex.	85.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	16.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	14.75
Silica cement, net ton, bulk, Utah and Calif.	21.00

Chrome Brick

	Per Net Ton
Standard chemically bonded, Balt., Chester	$69.00

Magnesite Brick

Standard, Balt. and Chester	$91.00
Chemically bonded, Balt. and Chester	80.00

Grain Magnesite

	Std. ⅝-in. grains
Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	$30.50 to 31.00
in sacks with fines	35.00 to 35.50

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest, add 10¢; Missouri Valley, add 20¢	$12.25

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb.
(Metropolitan area delivery, add 15¢ to base price except Cincinnati and New Orleans (*), add 10¢; New York, add 20¢.)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Baltimore	5.31	6.21-6.41	6.95-7.11	5.37	....	5.56	5.36	5.42	6.16	....	10.10	....	....
Birmingham	5.05	....	6.45	5.05	6.68	5.25	5.00	5.00	6.68	....	....	....	....
Boston	5.55	6.45-6.75	7.71-7.85	5.65-5.95	6.75	5.80	5.42	5.52	6.27	9.64-9.82	10.04-10.07	11.23-11.27	11.47-11.52
Buffalo	4.85	5.00-5.75	7.26-7.70	5.29-5.65	6.35-7.27	5.35	5.10	5.05-5.15	5.90	9.70-9.73	9.95-9.98	11.15-11.18	11.40-11.43
Chicago	4.85	5.75	7.10	4.85	6.68	5.10	.90	4.90	5.70	9.35-9.50	9.60-9.75	10.80-10.90	11.05-11.15
Cincinnati	5.16-5.28*	6.13*-6.18	7.53	5.28*-5.55	....	5.53*-5.63	5.40*-5.48	5.33*-5.55	6.09*-6.10	9.74	9.99	11.19	11.44
Cleveland	4.98-5.16	5.75-6.06	7.20-7.46	5.03-5.15	....	5.37-5.54	5.16-5.47	5.17-5.34	5.90-5.97	9.49-9.66	9.74-9.91	10.95-11.07	11.19-11.32
Detroit	5.28-5.32	6.07-6.18	7.53-7.58	5.28-5.47	6.27-6.58	5.53-5.57	5.40	5.33-5.55	6.01-6.10	9.69-9.82	9.94-10.07	11.11-11.14	11.35-11.39
Houston	6.50-6.70	....	8.50	7.00	....	6.70	6.55	6.65	7.60	10.30	10.25	11.45	11.70
Indianapolis	5.15	6.05	7.39	5.15	6.25	5.40	5.20	5.35	6.50	....	....	....	....
Los Angeles	6.45-6.60	7.90-8.05	8.75-8.90	6.65-6.80	9.35[5]	6.15	5.95-6.10	6.10-6.25	7.95[14]-9.35	10.90-11.60	10.85-11.55	12.40-12.95	12.65-13.20
Memphis	5.75	6.60	....	5.95	6.80	5.95	5.75	5.75	6.50	....	....	....	....
Milwaukee	5.03	5.93	7.28	5.38	6.86	5.28	5.08	5.08	5.87-5.88	9.53	9.78	10.98	11.23
New Orleans	5.95*	6.75*	....	6.15*	....	6.15*	5.95*	5.95*	6.65*	....	....	....	....
New York	5.40-5.51	6.46	7.71-7.86	5.62-5.98	....	5.70-6.00	5.33-5.61	5.57-5.80	6.41-6.61	9.73-9.93	9.98-10.18	11.18-11.38	11.43-11.63
Norfolk	5.80	....	....	6.05	....	6.05	6.05	6.05	7.05	....	....	....	....
Omaha	5.92	....	9.18	5.92	....	6.17	5.97	5.97	6.77	....	....	....	....
Philadelphia	5.32	6.49	7.48-7.58	5.60	6.69	5.53	5.25	5.55	6.34	9.64-9.69	9.89	10.94	11.19
Pittsburgh	4.85	5.75[1]	7.15	5.00	6.00	5.05	4.90	4.90	5.65	9.35	9.60	10.80	11.05-11.30
Portland	6.50[8]-6.60	8.00[1]	8.80-9.20	6.85[8]	....	6.30[8]	6.35[8]	6.35[8]	8.25[14]	10.50[6]	10.10[6]	....	....
Salt Lake City	7.05-8.00	8.20	7.90-9.06	7.10-7.70	....	5.75-6.85	6.65-7.00	6.95-7.25	7.40	....	....	....	....
San Francisco	6.15[8]	7.50[2]	8.10[2]	6.75[8]	8.25[5]	6.35[8]	5.90[8]	5.90[8]	7.55-7.55	10.90[15]	10.85[15]	12.40[15]	12.65[15]
Seattle	6.20[4]-7.10[4]	7.75[2]-8.65[2]	7.65 9.15[2]	6.55[4]-6.70[4]	....	6.20-6.35[4]	6.15-6.30[4]	6.05[4]-6.20[4]	8.00[14]-8.15[14]	....	10.30[15]-11.35[15]	....	12.00[15]-14.10[15]
St. Louis	5.21-5.37	6.12-6.27	7.47-7.52	5.22-5.97	8.68	5.47-5.62	5.27-5.42	5.27-5.92	6.07-6.22	9.72	9.97	....	11.42
St. Paul	5.44	6.19-6.34	7.74	5.44	6.82	5.64-6.69	5.49	5.49	6.29	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED:

Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED:

Sheets, 400 to 1999 lb; strip, extras on all quantities bars 1000 lb and over.

ALLOY BARS:

1000 to 1999 lb.

GALVANIZED SHEETS:

450 to 1499 lb.

EXCEPTIONS:

(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb; (18) 1000 to 1499 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight nor the 6 pct increase on total freight charges in the Eastern Zone (5 pct Southern Zone, 4 pct Western Zone), effective Jan. 11, 1949.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	.....	.....	.....	.....
Birmingham	42.88	43.38	.....	.....	.....
Buffalo	47.00	47.00	47.50	.....	.....
Chicago	46.00	46.50	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.50	46.50	47.00	.....
Erie	46.00	46.50	46.50	47.00	.....
Everett	.....	52.50	53.00	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	46.00-47.00	46.50-47.50	.....	.....	.....
Lone Star, Texas	46.00	46.50†	.....	.....	.....
Neville Island	46.00	46.50	46.50	.....	.....
Geneva, Utah	46.00	46.50	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	50.00	50.50	51.00	51.50	.....
Toledo	46.00	46.50	46.50	47.00	.....
Troy, N. Y.	.....	.....	.....	.....	54.00
Youngstown	46.00	46.50	46.50	.....	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Producing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	53.00	53.50	.....	.....
Boston	Steelton	6.27	54.27	54.77	55.27	55.77	60.27
Brooklyn	Bethlehem	3.90	51.90	.....	.....	.....	.....
Cincinnati	Birmingham	6.09	48.97	49.46	.....	.....	.....
Jersey City	Bethlehem	2.39	50.39	.....	.....	.....	.....
Los Angeles	Geneva-Ironton	6.93	52.93-53.93	53.43-54.43	.....	.....	.....
Mansfield	Cleveland-Toledo	3.03	49.03	49.53	49.53	50.03	54.03
Philadelphia	Bethlehem	2.21	50.21	.....	.....	.....	.....
Philadelphia	Swedeland	1.31	51.31	51.81	52.31	52.81	.....
Philadelphia	Steelton	2.81	50.81	51.31	51.81	52.31	56.81
San Francisco	Geneva-Ironton	6.93	52.93-53.93	53.43-54.43	.....	.....	.....
Seattle	Geneva-Ironton	6.93	52.93-53.93	53.43-54.43	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Gulf Ports	Lone Star, Texas	......	50.50	51.00†			

† Low Phos, Southern Grade

Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio—$59.50; f.o.b. Buffalo, $60.75. Add $1.25 per ton for each additional 0.50 pct Si up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $66.00 per gross ton, f.o.b. Lyles, Tenn. Delivered Chicago, $73.78. High phosphorus charcoal pig iron is not being produced.

FERROALLOY PRICES

Ferromanganese

78-82% Mn, Maximum contract base price, gross ton, lump size.

F.o.b. Birmingham	$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$172
F.o.b. Johnstown, Pa.	$174
F.o.b. Sheridan, Pa.	$172
F.o.b. Etna, Pa.	$175

$2.00 for each 1% above 82% Mn; penalty, $2.00 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.45
Ton lots	12.05
Less ton lots	12.95

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$64.00	$65.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract pricè, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Ci	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis, carlots, bulk delivered, per lb of briquet	10.30
Ton lots	11.90
Less ton lots	12.80

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, openhearth $84.00, foundry, $85.00; $84.75 f.o.b. Niagara Falls; Electric furnace silvery iron is not being produced at Jackson. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50 pct. Mn over 1 pct.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk	6.30
Ton lots	7.90
Less ton lots	8.80

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.

25% Si	18.50
50% Si	11.30
75% Si	13.50
85% Si	14.65
90-95% Si	16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si)

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload, bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, cents per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	1.09
0.50% max. C	1.05
9.00% min. C	1.04

Calcium—Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60.65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25%Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Ton lots and carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound contained V_2O_5	$1.20
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	$2.90
Less ton lots	2.95
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	$1.10
Calcium molybdate, 45-50%, f.o.b. Langeloth, Pa., per pound contained Mo.	96¢
Molybdenum oxide briquets, f.o.b. Langeloth, Pa., per pound contained Mo.	95¢
Ferrotitanium, 40%, regular grade, 10% C max., f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.28
Ferrotitanium, 25%, low carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.40
Less ton lots	1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, carloads, per net ton	$160.00
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.	
Carload, bulk	6.60¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	8.90¢
Ton lots	9.80¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk	11.00¢
Ton lots, packed	11.25¢
Less ton lots	11.75¢

Boron Agents

Contract prices per pound of alloy, delivered.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D.	
Ton lot	$1.20
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.	
Ton lots	$1.67
Less ton lots	1.79
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered.	
Ton lots	45.00¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y.; freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.625¢
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$6.25

Production of Sponge Iron Discussed in New Government Bulletin

Washington

• • • **Foreign and domestic** methods for producing sponge iron by the gaseous reduction of iron ore are described in a Bureau of Mines report of investigations covering tested processes or those proposed within the last 100 years.

Pointing out that no commercial process has been developed in this country, the report shows that in United States patent applications from 1876 to 1947, shaft furnaces have been used most frequently in making sponge iron. In addition to shaft furnaces, Bureau research has included experiments with a rotary kiln, a multiple-hearth furnace, and a retort furnace.

Of various reducing gases proposed for making sponge iron, carbon monoxide is the most common one, with hydrogen next in importance. Other gases discussed in the report include coal gas, Bosh gas, fuel gas, illuminating gas, methane, natural gas, oil gas, producer gas, and water gas.

Material for the Bureau's report on sponge iron research was compiled by Edward P. Barrett, chief of the Minneapolis Branch Office of the Bureau's Metallurgical Div. Included in the report is an extensive bibliography on the production of sponge iron by reduction with hydrogen, reduction with carbon monoxide, and reduction with other gases.

A free copy of the publication, Report of Investigations 4402, "Gaseous Reduction Methods for the Production of Sponge Iron," may be obtained by writing to the Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

Reports Biggest Year

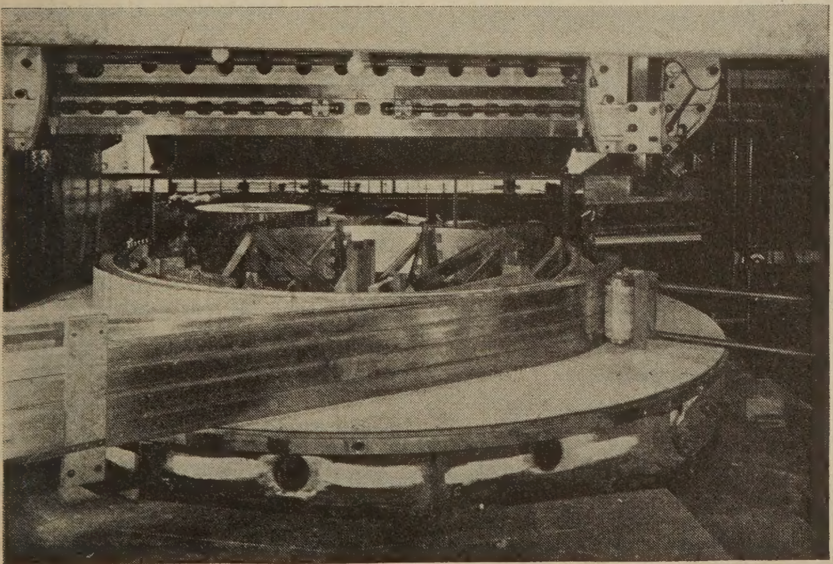
Youngstown

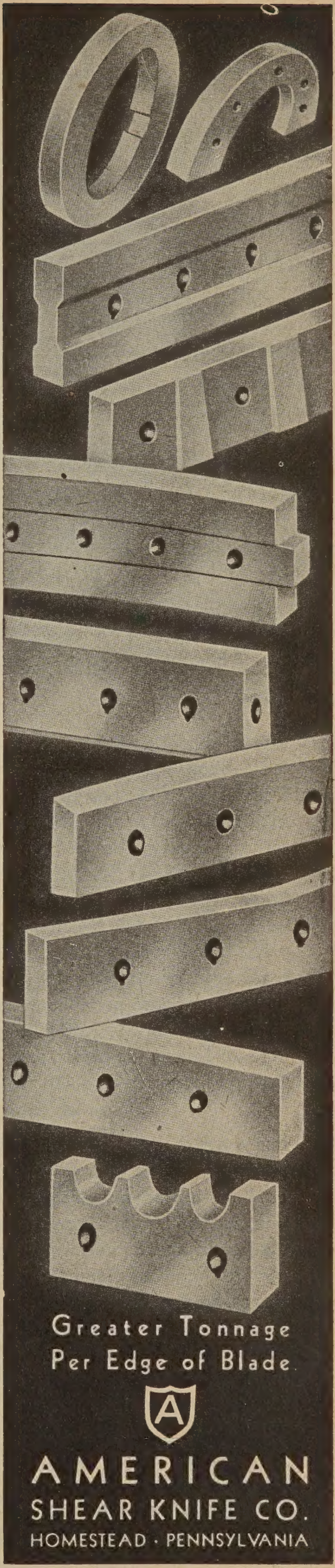
• • • **The General Fireproofing** Co. of Youngstown, had the biggest year in its history, according to the annual report for 1948 which was recently submitted to stockholders at the annual meeting.

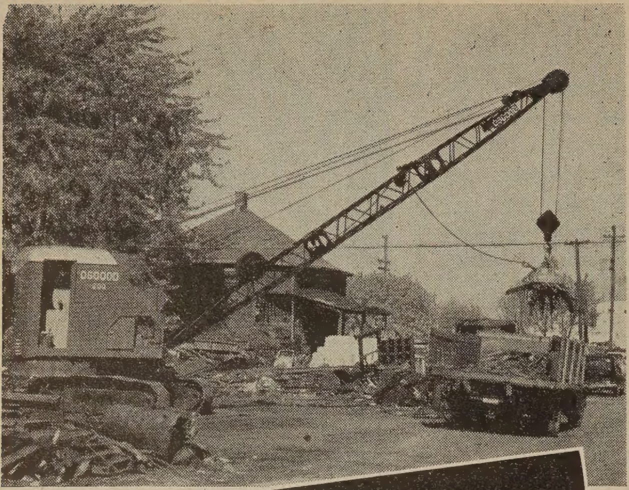
The 1948 annual report showed a net profit of $3,798,310.61, an all-time high for the company. Net sales totalled $33,395,358.68, an increase of $5,572,540.61 over 1947 and more than double the figure reached during 1946.

Shipments for the year represented an increase of 20 pct over the preceding year.

ROUND AND ROUND SHE GOES: *Sixteen heavy bands of pure copper, each 5 in. wide, are being wound to form the coils of the Synchrocyclotron for the Carnegie Institute of Technology. The copper was fabricated at the Elizabeth, N. J., mills of the Phelps Dodge Copper Products Co.*







WRECKING COMPANY CUTS LABOR COSTS FROM $2.04 TO 14c PER TON WITH OSGOOD MAGNET CRANE

LABOR COST of loading pre-cut, low phos scrap at the Galion Auto Wrecking Company dropped from $2.04 to 14c per ton when an OSGOOD Magnet Crane went to work. Formerly, 4 men loading by hand could get out 120 tons in a 54-hour week at a cost of $244.20. With the OSGOOD Magnet Crane, it is now possible for 2 men to load this same volume in only 7½ hours at a labor cost of only $16.95. In continuous operation, the OSGOOD could load as many as 18 trucks (144 tons) of this type of scrap per 9-hour day at a saving of $1.90 per ton or $273.60 in labor costs. No wonder Max Levant, the owner, says "Wish I'd had my OSGOOD sooner. We couldn't do without it now."

• • •

THE ABOVE EXAMPLE is no exception. Scrap yards, plants, foundries, and warehouses across the nation are having equally profitable experiences with OSGOOD Magnet Cranes. These rugged, trouble-free cranes outperform anything you've ever seen for handling plates, billets, and odd-shaped pieces, large or small. Carriers are loaded, and yards rearranged, in record time. Safety of workers is greatly increased. Enclosed cab permits work in all weather. Crane soon pays for itself. Write for more information today.

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- Extremely rigid frame. Built to big press standards for quality.
- Cylinder *"TRU-BORED"* and honed. Long life. Minimum maintenance.

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